

**Managing Standard Construction Contractual Forms
Modifications in the Middle East- Overview and Recommendations**

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Dedication

I dedicate this piece of research to my dearest wife Ghaidaa and my beloved angels Najla & Nadim

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Abstract

Despite the fact that there exists several construction forms of contract that aim to standardize the contractual clauses in relation to the construction industry, the adoption of the same has been subject to major modifications and alteration endangering the overall spirit and consistency of the contractual forms.

Within the construction industry, many parties are involved in projects. Those parties mainly include the Client and the Contractor, in addition to the Project Manager, Project Consultant(s), Subcontractor(s) and Suppliers. Hence, contracts need to be customized, agreed, and signed to formalize parties' relationships. Knowing that the Middle East region has, and will continue to have, major construction projects during the upcoming years, it is of major importance to understand the nature of Standard Contractual forms being used and the modifications that are being introduced, noting that well configured contractual clauses play a major role in simplifying part of the complexity associated with the construction environment.

This research focuses on standard construction contracts in practice between 2005 and 2015, in the Middle East, with their corresponding conditions. The aim of this research is to investigate the major modifications originally introduced to provide additional immunity to a certain project party within the Middle East region to improve construction management performance. This is achieved by first reviewing the various international standard forms of contract, and general contractual issues, and then further investigating the reasons and implications of major modifications introduced to these standard forms of contract. A single case study is examined in this study, within which questionnaire surveys and semi-structured interviews are used as the data collection techniques. It is found that one of the most commonly used standard contractual forms between 2005 and 2015 in the Middle East is the Conditions of Contract for Works of Civil Engineering Construction 4th Edition. The key findings highlight the reasons for the introduction of major modifications as being over protecting one of the parties or providing additional flexibility to one of the parties. Furthermore, the implications of introducing such modifications are identified as compounding the issues of project performance in terms of delays and cost escalation. This study recommends measures and modifications that would allow for contextual appropriateness, yet mitigate the impact of the same through the introduction of a proper balanced contract which is fit for purpose.

CHAPTER 1
INTRODUCTION

CHAPTER 1 - INTRODUCTION

1.1. Introduction

Despite the fact that there exists several construction forms of contract that are aimed at standardizing the contractual clauses in relation to the construction industry, the adoption of the standard forms have been subject to major modifications and alteration endangering the overall spirit and consistency of the contractual forms through particular applications.

1.2. What are the “Standard General Conditions of Contract”?

Within the construction industry, many parties are involved in projects. Those parties mainly include the Client and the Contractor, in addition to the Project Manager, Project Consultant(s), Subcontractor(s) and Suppliers. In order to progress the proper project construction delivery on time, on budget and to a high quality (Project Management Institute, 2008) those parties need to work in a certain controlled manner to ensure that processes and procedures are adhered to within the construction industry. In this regard, contracts need to be customized, agreed, and signed, to formalize parties' relationships.

A contract is “an agreement between two or more parties creating obligations that are enforceable or otherwise recognizable as law” (Garner, 1995, p. 215). There are various types of construction contract. The choice of contract type depends on the project procurement methods designed to serve the project objectives and the existing constraints such as different ways of handling risk transfer, pricing, responsibility for performance, complexity, and cost certainty.

A prerequisite requirement for the signature and execution of a contract, amongst other things, are the general conditions that all the parties to the contract need to agree upon (Tatarestaghi, 2011). Pathak (2010, p52) identifies ‘General Conditions of Contracts’ as general terms on which a corporation procures its resources or, contracts with other corporations.

Accordingly, the General Conditions of Contracts are between the owner and the general contractor, the owner and the designer, the owner and the supervisor, the owner and the professional construction manager, and between the general contractor and the subcontractors depending on the project stakeholders and the situation at hand (Sutt, 2011).

The contractual relationship is formed by the arrangement of a contract. The contract defines, for the construction parties, the baseline of understanding of the offer, acceptance,

and consideration agreed upon for a project. Overall, the general conditions of contract include provisions pertaining to many issues, particularly: defining roles, rights, responsibility, accountability, and authorities that are needed to be able to execute the agreed upon works. Concerning authorities and responsibility relationship: “Experience has taught us that responsibilities without authorities are a dangerous situation in which to find oneself, and also that with authority there is associated responsibility” (Clark, 1993, p. 7).

General Conditions of Contract in construction are being standardized by several international bodies through Standard Forms of Contract which are considered to be readymade terms and conditions to be used when making a contract (Kwakye, 1997).

1.3. Importance of Investigation of the “Standard General Conditions of Contract”

The General Conditions of Contract are as significant to the management and progress of construction projects and the profitability of the construction industry, as are accurate schedules, reliable equipment, and quality materials. Accordingly, adequately configured contractual clauses play a major role in simplifying part of the complexity associated with the construction environment (Cushman and Cook, 1995). This is one of the reasons behind the effort in establishing Standards General Conditions of Contract. Indeed, it has been recorded that the standard contracts forms are well known and widely used in the Middle East (Latest International Construction News & Guides, September 2013).

The main issue is that the project parties often focus on the contractual aspects governing the project rather than technical and execution issues which would eventually flag as a hindrance in the project’s original schedule and certainly produce an escalation to the project’s original budget, being the contracted value, notwithstanding the project’s work atmosphere (Cornick et al., 1999) in the absence of proper Conditions of Contract. Therefore, Conditions of Contract are critical criteria that must be determined ahead of any purchase negotiation (Ross, 2003) due to its effect on the project progress parameters.

1.3.1. Standard General Conditions of Contract as a Regulatory Frame Work

The standard General Conditions of Contract are of major importance since they play a main regulatory role throughout the various project interfaces during the project implementation phase starting from defining parties’ roles, contract time frame, payment procedures, Force Majeure details, claims, disputes and arbitration procedures. Accordingly, the Standard General Conditions of Contract are of major importance since the same play the main regulatory role at the various project interfaces during project execution, which

mandates attention and proper tuning during the project award stage through to its corresponding Particular Conditions of Contract. In other words, the standard general conditions of contract need to be modified to fit the particular project circumstances.

1.3.2. Modifications to Standard General Conditions of Contract

The modifications introduced to the General Conditions of Contract (PART I) are called “Conditions of Particular Application” (PART II). These conditions complement the General Conditions of Contract for a specific project. Accordingly, any project’s specific amendments to the General Conditions must be described and detailed in the Particular Conditions (Shnookal, 2010).

The Particular Conditions needs to be introduced, as per the “Fédération Internationale Des Ingénieurs Conseils” “FIDIC” Fourth Edition reprint 2011, for the following reasons:

1. Where the General Conditions of Contract requires further information to be included in the Particular Conditions without which the conditions are not complete.
2. Where the General Conditions of Contract require supplementary information to be included in the Particular Conditions without which the conditions would still be complete.
3. Where the locality and circumstances of the scope of works necessitate additional clauses to the General Conditions of Contract.
4. Where the law of the country in which the works to be executed necessitates introducing modifications to the General Conditions of Contract.

As per the FIDIC terminology, to the General Conditions of Contract are called (PART I) and the “Conditions of Particular Application” and are considered to be (PART II).

It is to be noted that the FIDIC standard contract family publishes its contracts either in hardcopy or as non-editable PDF electronic files. It could be argued that this has been done intentionally in order to prevent and discourage any modification to the General Conditions without referring the said amendment to the Particular Application, which would guarantee to a certain extent the transparency of there being introduced amendments.

If modifications are introduced for reasons that do not belong to the above four points, then the said modifications need close attention.

1.3.3. General Conditions of Contract as a Source of Dispute

If the particular contractual clauses were not drafted responsibly, or falsely tuned, contracts, even those with standardized general conditions, negotiation and signature would be a time consuming challenge and would thus take considerable time from the total time that was originally allocated (Tatarestaghi, 2011).

During project execution, the problem may become worse if the contractual terms and conditions are not properly considered i.e. the contracting parties do not have a clear understanding of what they have agreed upon, accordingly, any claim may be considered as a fertile ground for contractual disputes (Murdoch and Hughes, 2008). In 2006, Fenn et al developed and published a summary of the studies of the sources of disputes (Fenn et al., 2006). His research showed that disputes often relate to extension of time, variation to scope, payment, administration, contract terms and so on. For instance, Lewis et Al. (1992) recorded that one of the causes of conflicts is that the damaged party had not identified the risk as relevant to the project. Also, and if the risk was identified, insufficient steps were taken to mitigate its effect. Another cause is that the allocation of risks between the various parties to the contract was not clearly established in the first place. Several authors have studied the reasons for disputes; Jergeas & Hartman (1994) noted that unbalanced bidding and underestimation are well-known reasons for which claims arise. Lee (1994) noted that unfair contract clauses, vague definition of contract documents in terms of performance period, payment, and variations contribute to disputes arising from contract problems. Wang (2001) recorded that unfairness of contract / unfairness of risk allocation, variations, delay claims, and termination of contracts often form grounds for a claim. Kheinde & Aiyetan (2002) indicated that variations and additional work cause high levels of contractual claims. Lo (2002) noted that differences in contract interpretation between project parties would lead to construction conflict. Yan (2002) argued that contractual factors form one of the sources of dispute. Jones (1994) highlighted that unrealistic tendering and inadequate contract drafting are two factors that would contribute to disputes. It was also noted that unfair contract clauses are a factor of construction disputes.

From the above, it can be seen that several authors have concluded that the contractual details, if not responsibly considered, may act as sources of disputes. Appendix A presents an additional illustration of Fenn et al findings.

Within the Middle East region, the situation is not different, Al-Hammad, (1993), noted that there exists “interface problems” in the relationship of a main contractor and subcontractor. The problems relate mainly to contract progress payment, lack of construction

quality work, execution errors, and delays in shop drawings and/or sample material approval, which mandate clear contractual responsibility to deal with the same and avoid problem escalation.

In the Middle East region, Daoud et al (1999) also confirmed that “Construction contracts in the Middle East often suffer from delays and cost overruns” which in turn is attributed to many factors including, but not limited to, the improper “modifications carried out by project owners on standard contract conditions” which would definitely lead to the dispute path. It is important to note that standard contractual forms provide a solution to contract evenhandedness, since standard forms present “an impartial starting point” (Shnookal, 2010, p11), although these may be invalidated through the modifications introduced, i.e. particular applications that may limit the advantages of the standard form.

In addition, the Ndekurgi and Rycroft (2015) noted that modifications can make standard clauses ambiguous. Also, it is important to consider that the ramifications of alterations do not have a detrimental effect on other interlinked clauses or on the contract as a whole. Both are perceived to be problematic to the contract clauses and present seeds for potential claims.

The above issues represent a challenge to any project manager whose aim is to finish the project within the given time frame and allocated budget constraints. Hence, it would be of great importance to have the particular conditions properly tuned. The same would alleviate the disputes that relate to contractual terms and would support the contracting parties to jointly work towards the same goal.

1.3.4. Formulation of the Research Problem

The previous sections showed that the conditions of contract often play a major regulatory role throughout the various project interfaces between project parties, and several authors have noted that these conditions of contract, if not properly considered, can become sources of dispute, demonstrating the importance of studying the conditions of contract, which will be the focus of this study. In terms of the contextual setting, it was proven above that Construction contracts in the Middle East often suffer from delays and cost overruns which in turn is attributed to many factors including, but not limited to, the improper modifications carried out by project owners on standard contract conditions which represent a mounting evidence regarding how construction contracts in the Middle East suffer from delays and cost overruns due to modifications introduced to standard contract conditions. For this reason, this study will focus on such amendments within this region.

1.4. Aim and Objectives

The aim of the research is to investigate the modifications introduced to the Standard Conditions of Contract form in the construction industry in the Middle East to improve construction management performance.

The outcomes of this study will serve as a source of reference and guide for various participants in contract management within the construction industry in the Middle East.

To achieve the aim, the following objectives will be considered:

1. To review the main families of international Standard Forms of Contracts that exist in relation to the construction industry or any other contractual form.
2. To review and identify which family of international Standard Forms of Contract are being used in the Middle East region.
3. To review and identify the most commonly used Standard Form of Contract within that specific contract family identified in step 2.
4. To examine the extent of alteration to contractual clauses and sub-clauses within the identified Standard Form.
5. To investigate the governing reasons that mandated the introduction of the modifications.
6. To investigate the impact of modifications of standard conditions of contracts towards performance in the construction industry.
7. To make recommendations in relation to the modifications being witnessed to be used by various industry stakeholders.

In the absence of adequate literature identifying the most commonly used Standard Construction contractual forms in the Middle East, the first three objectives are of importance since these help to focus the investigation in this study, on the most commonly used Standard Contractual Forms to ensure wide spread benefit of this study outcome.

1.5. Structure of the Thesis

The chapters of the thesis are organized as follows:

- Chapter 1 provides the introduction to the study including the aim and objectives, justification for the study, in addition to the overall thesis structure.
- Chapter 2 presents a thorough literature review that deals with international standard forms of contract families and general contractual issues. The last part of this chapter provides an overview of the Middle East construction industry.

- Chapter 3 provides details about the research methodology that is most suitable in achieving this research aim and objectives. This chapter details the research philosophy, approach, data collection and analysis techniques used for the study.
- Chapter 4 provides findings in relation to the most commonly adopted standard contract families and standard contract forms. The last section of this chapter provides details (Ranking) about the modifications introduced to the clauses of the standard contract form.
- Chapter 5 focuses on the largely modified standard sub-clauses. Each modification is investigated by understanding the modifications circumstances; the purpose of the modifications and the corresponding impact and consequences. Initial conclusions about the said modifications are discussed before the last section which addresses recommendations validation.
- Chapter 6 provides conclusions and guidelines in relation to the modifications being witnessed, which will be of use to various industry stakeholders in the Middle East.

CHAPTER 2
LITERATURE REVIEW

CHAPTER 2 - LITERATURE REVIEW

2.1. Introduction

This chapter examines the literature related to construction contracts, the existing International Construction Contracts Standards, some basic definitions and characteristics that relate to the construction industry and project performance, and finally an overview of the construction industry in the Middle East in terms of previous trends and future prospects.

2.2. What is a Construction Contract?

There exists several definitions for Construction Contract, for instance: “Any contract where one person, or corporate, agrees for valuable consideration to carry out construction works, which may include building or engineering works for another” (Loots and Charrett, 2009, p. 23). Comprehensively, the Construction Contract is “a contract or another arrangement under which one party undertakes to carry out construction works or to supply related goods and services for another party” (Loots and Charrett, 2009, p. 23). It is a procurement contract with construction works being the scope of execution.

Conditions of Contract comprise a series of conditions attending to different aspects each but at all times coherent. This coherence is maintained through a series of responsibilities and relationships, some of which are clearly expressed, where other links follow by consequence.

If two parties to a construction contract were to draft the conditions of contract from scratch it would be an enormous undertaking. If they were to sublet such tasks to lawyers it would equally be an enormous cost. And since such a contract would be drafted and used for the first time there are no guarantees that there are no contractual flaws or that it is not balanced as per the parties’ best interests. It is worth noting that in the construction industry, the forms of contract were mainly drafted by independent professional organizations rather than by one of the parties or by commercial organizations (Bunni, 2005).

2.3. Construction Contracts Standard Forms

As previously discussed in Chapter 1, Standard form contracts are pre-prepared documents where all the legal terms were previously set. There exists several international standard forms of contract for construction. A brief narrative of standard contracts for construction that are used in the construction industry today is presented below. This

background information provides the context of how present contracts came about and by whom. The contract forms to be investigated are in families, to include:

1. The American Institute of Architects (AIA)
2. Fédération Internationale des Ingénieurs-Conseils (FIDIC)
3. The Joint Contracts Tribunal (JCT)
4. Institution of Civil Engineers (ICE)
5. The New Engineering Contract (NEC)
6. Institution of Engineering and Technology (IET)
7. The Association of Consultant Architects (ACA)
8. BE Collaborative Contract
9. Consensus DOCS Contracts
10. International Chamber of Commerce (ICC)

2.3.1. The American Institute of Architects (AIA)

The AIA published their first Standard agreement forms around 120 years ago and today their group of over 100 contract and administrative forms are widely used throughout the construction industry. The AIA documents are usually updated periodically. The most recent update was issued in November of 2007 and contained approximately 40 new or revised forms including the “General Conditions of the Contract for Construction” A201 (AIA Contract Documents, 2009).

2.3.2. Fédération Internationale des Ingénieurs-Conseils (FIDIC)

FIDIC (French acronym for the International Federation of Consulting Engineers) was founded in 1913 by three countries. The founding member countries of the FIDIC were Belgium, France and Switzerland. FIDIC is known for producing standard forms of contract for civil engineering construction, and mechanical and electrical plant. The suite of FIDIC contracts are well known by their colours, for instance: Conditions of Contract for Construction (“Red Book”), Conditions of Contract for Plant and Design-Build (“Yellow Book”), Conditions of Contract for EPC/Turnkey Projects (“Silver Book”), Short Form of Contract (“Green Book”), etc. The suite of contracts presented by FIDIC in 1987 were replaced in 1999. It is worth noting that there are important changes between those issued in 1987 and then in 1999 (Bunni, 2005).

2.3.3. The Joint Contracts Tribunal (JCT)

JCT has a long history of setting the standard for contracts in the construction industry. In 1931, the Joint Contracts Tribunal (JCT) was formed by the Royal Institute of British Architects (RIBA) and the first JCT Standard form of building contract was issued (although the forms were not referred to as JCT until 1977). One local authority version was published in 1937. Later editions of the contract were revised and published in 1939, 1963, 1980, and 1998.

In 1963 the range was extended to four, with the publishing of the ‘without quantities forms’ of the local and private versions. From 1967 JCT forms were issued and updated. The range of contract families has grown over time, accounting for and adapting to changes in industry practice, new procurement methods, and changes in legislation.

Today JCT is the leading provider of contract documentation, which not only covers standard forms of main and sub-contract for each of the key procurement methods, but also guidance documents, homeowner contracts, partnering documentation, collateral warranties, and agreements (The Joint Contracts Tribunal, 2012).

2.3.4. Institution of Civil Engineers (ICE)

ICE is an international membership organization that promotes and advances civil engineering around the world. ICE is a qualifying body, a center for the exchange of specialist knowledge, and a provider of resources to encourage innovation and excellence in the profession worldwide.

In 1818, the Institution of Civil Engineers was founded by a small group of idealistic young men. Today, ICE has over 80,000 members across the world. But, despite the tremendous advances in technology and the growth of the engineering profession, ICE has the same purpose as it did when it was founded nearly two centuries ago.

In recent years, ICE published several international contracts forms including:

1. ICE Conditions of Contract Measurement Version 7th Edition: July 2004
2. ICE Conditions of Contract Design and Construct 2nd Edition: July 2004
3. ICE Conditions of Contract Minor Works 3rd Edition: July 2004
4. ICE Conditions of Contract Term Version: July 2004
5. ICE Conditions of Contract Ground Investigation 2nd Edition: July 2004
6. Agreement for Consultancy Work in respect of Domestic or Small Works:
amendments Dec 1999

From August 1, 2011, ICE has officially withdrawn from the ICE Conditions of Contract (ICE CoC). The withdrawal follows a decision made by the ICE Council in 2009 to solely endorse the NEC3 Suite of Contracts and the consequent agreement in July 2010 to withdraw from ICE CoC after a 12 month period.

ICE developed the NEC in the early 1990s. It is now used in over 20 countries worldwide, and many high profile domestic projects including the London Olympics 2012 and Crossrail (Institution of Civil Engineers, 2012).

2.3.5. The New Engineering Contract (NEC)

The NEC was developed by ICE in the early 1990s. A consultative edition was produced by 1991. The reason for issuing a contract for consultation was clearly to obtain comments from as wide a section of the industry as possible. Some employers evidently felt sufficiently confident to use the consultative edition in real situations. Feedback from these contracts, a number of which were in countries other than the UK, was extremely valuable. Comments were considered and debated by the working group and drafting team, which then produced the first edition for publication in 1993 (Weddell, 2006).

2.3.6. Institution of Engineering and Technology (IET)

The IET is a world leading professional organization sharing and advancing knowledge to promote science, engineering and technology across the world. Jointly with the Institution of Mechanical Engineers, The IET issues a range of model forms of general conditions of contract and some separate guides (known as ‘commentaries’) to their use. These are model forms of contract for electrical and mechanical work and consultancy. The contents of these publications are decided by a joint committee of IET/ IMechE members and others representing the various interests of the electrical and mechanical engineering industries (The Institute of Engineering and Technology, 2012).

2.3.7. The Association of Consultant Architects (ACA)

ACA is the national professional body representing architects in private practice - consultant architects - throughout the UK. Founded in 1973, it now represents some of the country's leading practices, ranging in size from one-person firms to very large international organizations (The Association of Consultant Architects, 2012).

ACA publish a number of key documents used extensively by the building profession. The latest are:

- New publications for 2011 Guide to ACA Term Partnering Contracts TPC2005 and STPC2005
- New publications for 2010 STPC2005 - ACA Standard Form of “Specialist Contract for Term Partnering”. SPC2000 Short Form - ACA “Standard Short Form of Specialist Contract for Project Partnering”. A Scottish suite of documents in the PPC suite is also being drafted as well as a Guide to TPC2005 and STPC2005
- ACA SFA - ACA Standard Form of Agreement for the Appointment of an Architect ACA SFA/08 (originally published in September 2008) has now been updated to ACA SFA, 2010 Edition in English Law (Association of Consultant Architects, 2012).

2.3.8. BE Collaborative Contract

The BE Collaborative Contract is a form of contract for construction projects that underpins collaborative behaviour. The contract has been created by BE (Collaborating for the Built Environment). BE is the largest independent association for companies across the supply chain in the UK, committed to the research, design and delivery of sustainable built development.

This contract is intended for use by parties who genuinely want a contractual framework that assists a collaborative approach and who want to identify and manage risks, rather than simply passing them on under contract conditions. The BE Collaborative Contract aims to underpin collaborative behaviour, provide flexibility in use and be clear and concise (BE Collaborative Contract, 2012).

2.3.9. ConsensusDOCS Contracts

ConsensusDocs™ is a coalition of associations representing diverse interests in the design and construction industry that collaboratively develops and promotes standard form construction contract documents to advance the construction process. ConsensusDOCS published their first set of documents in September of 2007. ConsensusDocs contracts are written and endorsed by 36 leading associations with members from all stakeholders in the design and construction industry. By fairly allocating risk and incorporating best practices, ConsensusDocs helps reduce costly claims and contingencies, and lessen adversarial

negotiations, saving time and money. The contracts are written in plain English and address all project delivery methods (ConsensusDOCS, 2012).

2.3.10. International Chamber of Commerce (ICC)

The Commission on Commercial Law and Practice (CLP) (one of the Commissions of the ICC), based in Paris, France, is in the process of developing ICC model contracts and ICC model clauses, which give parties a neutral framework for their contractual relationships. These contracts and clauses are expected to be carefully drafted by the experts of the CLP Commission without expressing a bias for any one particular legal system. The idea behind ICC model contracts and clauses is to provide a sound legal basis upon which parties to international contracts can quickly establish an even-handed agreement acceptable to both sides (International Chamber of Commerce, 2012).

2.3.11. Summary

It is important to note that these forms of Contract were brought forward to serve a certain organization and carried a level of bias in allocating responsibilities. However, over time and to ensure being widely used these forms were more and more fine-tuned to reach a certain balance. This process of evolvement over time became formalized when one association started to seek the endorsement of the form by other organizations. For example, the standard forms published by both the National Society of Professional Engineers and the American Institute of Architects have been approved and endorsed by the Associated General Contractors of America. This led to the new revisions of the different forms being fair and balanced (Jervis and Levin, 1988).

The above review provided an introduction and evolution of current Standard construction contracts families that are present in the construction industry today.

2.4. National Standard Contract Models in Different Countries

The section above lists the international standard contracts. However, examining different countries it is evident that most countries have developed their own local standard contracts. In many cases these local standard contracts usually deviate in important details from the international standard contracts. This can be explained by the influence of the local rules and working habits. Over time these rules and habits have integrated in these contracts. (Puil Van Der & Van Weele, 2014). Appendix B provides an overview of some standard local and international contracts that are adopted in different countries by Thomson Reuters (2016).

2.5. Standard Contract Families Forms

In order to better understand the nature of contract forms enclosed in standard families, the AIA series of standard contract forms shall be further investigated. (AIA Contract Documents, 2015)

As per AIA publications, AIA Contract Documents are divided into six alphanumeric series by document use or purpose. It is up to the users to decide which documents are appropriate for a particular project. Table 1 shows AIA contract document series for further reference.

Table 1: AIA Contract Document Series

Document Series	Document Type	Documents numbers
A-Series	Owner/ Contractor Agreements	A101, A101SP, A102, A103, A105, A107, A121, A132, A132SP, A133, A133SP, A134, A134SP, A141, A142, A145, A151, A195, A201, A201SP, A221, A232, 232SP, A251, A295, A305, A310, A312, A401, A401SP, A441, A503, A521, A533, A701 and A751
B-Series	Owner/ Architect Agreements	B101, B101SP, B102, B103, B103SP, B104, B105, B106, B107, B108, B109, B121, B132, B132SP, B133, B142, B143, B144ARCH-CM, B152, B153, B161, B162, B171, B172, B195, B201, B202, B203, B204, B205, B206, 207, B209, B210, B211, B212, B214, B221, B252, B253, 305, B503 and B509
C-Series	Other Agreements	C101, C102, C103, C106, C132, C132SP, C141, C171, C172, C191, C195, C196, C197, C198, C199, C201, C202, C401, C401SP, C421, C422, C441 and C727
D-Series	Miscellaneous Documents	D101, D200 and D503
E-Series	Exhibits	E201, E202 and E203
F-Series	[reserved]	
G-Series	Contract Administration and Project Management Forms	G201, G202, G601, G602, G612, G701, G701S, 701CMa, G702, G702S, G703, G703S, G704, G704CMa, G704DB, G705, G706, G706A, G707, G707A, G709, G710, G711, G712, G714, G714CMa, G715, G716, G732, G736, G737, G741, G742, G742C, G742S, G743, G743C, G743S, 744, G745, G801, G802, G803, G804, G806, G807, G808, G809 and G810

The selection of the standard form depends on the type of project under consideration and the project size and nature. Table 2 shows AIA contract forms.

Table 2: AIA Contract Forms

Document	Type of Project	Description	Size
<u>Conventional (A201) Family</u> A101, A101SP, A102, A103, A107, A121, A201, A201SP, A221, A401, A401SP, A503, A521, A701, B101, B101SP, B102, B103, B103SP, B104, B106, B107, B108, B109, B121, B144ARCH-CM, B201, B202, B203, B204, B205, B206, B207, B209, B210, B211, B212, B214, B221, B252, B253, B503, B509, C101, C102, C103, C201, C202, C401, C401SP, C421, C422, C727 and D503	When the owner's project is divided into separate contracts for design (with the architect) and construction (with one or more contractors), it may be appropriate to use the A201 family.	This is the most commonly used family of documents because it is suitable for the conventional delivery approach of design-bid-build.	Small to large projects
<u>Construction Manager as Adviser (CMa) Family</u> A132, A132SP, A232, A232SP, A533, B132, B132SP, C132, C132SP, G701CMa, G704CMa, G714CMa, G732, G736 and G737	When the owner's project incorporates a fourth prime player—the construction manager—on the construction team (owner, architect and contractor) to act as an independent adviser on construction management matters through the course of both design and construction, use of the CMa family may be appropriate.	The Construction Manager as Adviser (CMa) approach enhances the level of expertise applied to managing a project from start to finish. In its purest form, this approach preserves the CMa's independent judgment, keeping that individual from being influenced by any monetary interest in the actual labour and materials incorporated in the construction work.	Small to large public and private sector projects
<u>Construction</u>	When the owner's	Under the Construction Manager as	Small to

<u>Manager as Constructor (CMc) Family</u> A133, A133SP, A134, A134SP and B133	project employs a construction manager who will complete the construction and also provide construction management services, use of the CMc family may be appropriate.	Constructor (CMc) approach, the functions of contractor and construction manager are merged and assigned to one entity that may or may not give a guaranteed maximum price, but which typically assumes control over the construction work by direct contracts with the subcontractors.	large private sector projects
<u>Design-Build Family</u> A141, A142, A145, A441, B142, B143, C141, C441, G704DB, G741, G742, G743, G744 and G745	The Design-Build family is used where the project delivery method is design-build.	In design-build project delivery, the owner enters into a contract with a design-builder who is obligated to design and construct the project. The design-builder then enters into contracts with architects and construction contractors, as needed.	Small to large projects
<u>Integrated Project Delivery (IPD) Family</u> <i>Transitional Forms</i> A195, A295 and B195 <i>Multi-Party Agreement</i> C191 <i>SPE Agreements</i> C195, C196, C197, C198 and C199	Integrated project delivery (IPD) is a collaborative project delivery approach that utilizes the talents and insights of all project participants through all phases of design and construction.	The AIA provides agreements for three levels of integrated project delivery. <i>Transitional Forms</i> are modeled after existing construction manager agreements and offer a comfortable first step into integrated project delivery. The <i>Multi-Party Agreement</i> is a single agreement that the parties can use to design and construct a project utilizing integrated project delivery. The <i>Single Purpose Entity (SPE)</i> creates a limited liability company for the purpose of planning, designing and constructing the project. The SPE allows for complete sharing of risk and reward in a fully integrated collaborative process.	Large private sector commercial projects
<u>Interiors Family</u> A151, A251, A751, B152 and B153	Documents in the Interiors family are for use on small to large tenant projects for FF&E procurement services (i.e., furniture, furnishings and equipment) and for FF&E procurement combined with architectural interior design and construction services. These documents anticipate procurement	The Interiors documents procure FF&E under a contract separate from design services, preserving the architect's independence from any monetary interest in the sale of those goods. AIA Document B152 may be used as the owner/architect agreement for the design of both FF&E and architectural interiors. AIA Document B153 is not suitable for construction work, such as major tenant improvements, and is used for design services related solely to FF&E	Small to large tenant projects

	of FF&E under a contract separate from design services.		
<u>International Family</u> B161 and B162	The International family is for U.S. architects working on projects located in foreign countries.	Because U.S. architects usually are not licensed in the foreign country where a project is located, these agreements identify the U.S. architect as a consultant, rather than an architect.	Small to large projects
<u>Program Management Family</u> B171, B172, C171 and C172	Use of the Program Management family of AIA Contract Documents may be appropriate when the owner involves one or more additional consultants (Program Manager and/or Design Manager) to assist with program wide design and construction issues.	The Program Management approach enhances the level of expertise applied to managing a program from start to finish.	Large projects
<u>Small Projects Family</u> A105 and B105	Use of the Small Projects family may be appropriate when a project is straightforward in design; of short duration (less than one year from start of design to completion of construction); without delivery complications, such as competitive bidding; and when project team members already have working relationships.	This family is suitable for residential project, small commercial projects, or other projects of relatively low cost and brief duration.	Small projects
<u>Digital Practice Documents</u> C106, E203, G201 and G202	These documents may be used for any projects involving digital data or Building Information Modeling.	AIA Document C106 provides a licensing agreement for transmission of digital data when not included in the prime agreement. AIA Document E203 is an exhibit to an agreement that establishes the parties' expectations for the use of digital data and building information modeling on the project and sets the process for developing detailed protocols governing the use of digital data and building information	Small to large projects

		modeling. Once agreed to, the relevant protocols and procedures are set forth in AIA Documents G201, Project Digital Data Protocol Form, and G202, Project Building Information Modeling Protocol Form.	
<u>Contract Administration & Project Management Forms</u> A305, A310, A312, B305, D101, D200, G601, G602, G612, G701, G702, G703, G704, G705, G706, G706A, G707, G707A, G709, G710, G711, G712, G714, G715, G716, G801, G802, G803, G804, G806, G807, G808, G809 and G810	These forms are generally useful for all project delivery methods.	The variety of forms in this group includes qualification statements, bonds, requests for information, change orders, construction change directives, and payment applications and certificates.	Small to large projects

From the above table, it can be concluded that a standard contract family includes several forms that serves different purposes within the construction industry framework.

2.6. Common Characteristics of Standard Forms

As per Jaeger and Hok (2010), one of the key references in international contract administration, the standard forms that are being used internationally have some common characteristics that practitioners need to be aware of and familiar with. The characteristics are as follows:

2.6.1. The Engineer's Role

Most of the above stated standard forms families use the concept of certification and a certifier. The certifier is a person or company which is usually nominated by the employer, who is authorized to certify payments, completion of the works and to determine claims. The

certifier, which is known under different names such as Engineer, Project Manager, Employer's Representative, Architect, etc., is a third entity to the contract who is not a party to it. However, the certifier derives its powers from the construction contract. The idea is that the parties to the contract agree that certain rights and obligations only exist under the condition that the certifier exercises his powers. As an example, payment is only due if the certifier evaluates and certifies the relevant amount. A claim is given, if the certifier has determined it (Jaeger and Hok, 2010).

As per *Sutcliffe v. Thackrah* [1974] AC 727, the common understanding of such position is the following:

“The building owner and the contractor make their contract on the understanding that in all such matters the Engineer will act in a fair and unbiased manner and it must therefore be implicit in the owner's contract with the Engineer that he shall not only exercise due care and skill but also reach such decisions fairly, holding balance between his client and the contractor.”

2.6.2 Certification/ Determination

As per Jaeger and Hok (2010), it is a common feature of construction contracts to provide for an independent third party to issue certificates signifying particular events and usually embodying administrative decisions as seen above. Usually the function of the certificate is to record factual events involving the certifier to form a judgment or giving an opinion.

On the other hand, Jaeger and Hok (2010) noted that standard forms quite often require the existence or issuing of a certificate as a precondition for payments. It is usual to provide a contract provision for evaluation and payment certification by the contract administrator. If no such certificate exists the employer is normally entitled to refuse such payment.

2.6.3 Time Related Considerations

Jaeger and Hok (2010) noted that the parties to a contract may consider time to be of the essence. They do this when time for completion is fixed (duration) or by fixing the date of completion. Also, they usually agree to liquidated damages (LD) for failure to comply with time for completion.

But what would be the situation if the employer prevents the contractor from complying with the time limits, either by instructions or by failure to grant possession of the

site? In this event there is a risk to slip into time at large, which means that the employer loses his right to apply liquidated damages in the event of delay by the contractor (Jaeger and Hok, 2010). In common law, the usual approach to preserve the employer's entitlement to liquidated damages is that the contractor becomes entitled to require an extension of time (EOT), if and when delay and disruption occurs which is attributable to the employer. Normally, the certifier has the power to determine whether the contractor is allowed to ask for time extensions. In order to make his decisions transparent and comprehensible, Jaeger and Hok (2010) noted that a sophisticated system has been established. Quite often network techniques are used showing the critical path of the works. If and when delay and disruption has any impact to the critical path time extension has to be granted. The same depend on the contract wording whether a time extension will be given for each impediment or not. Most often, only events which directly cause a delay on time for completion will be considered to be decisive.

2.6.4. Programming

Programming is the backbone feature to manage the progress of the works (Jaeger and Hok, 2010). In general, the contractor has to provide the programme and to update it. It depends on the contract wording and specification whether network techniques have to be used. In such a case, the critical path method as referred to in the Delay and Disruption Protocol of the English Society of Construction Law (SCL) or other references can be applied.

2.6.5. Substantial Completion and Taking Over

"All the above mentioned standard forms mirror the common law concept of substantial completion" (Jaeger and Hok, 2010). Taking over will be certified by the certifier, However, any legal liability will remain binding and the same is an indication of the beginning of any legal defects liability.

2.6.6. Liquidated Damages

As per Jaeger and Hok (2010), care has to be taken that in an international contract since penalty clause may be considered invalid, when common law is the proper law of the contract. Common law courts permanently hold that penalty clauses are not equitable and therefore void. Thus it is highly recommended not to use penalty clauses in international contracts.

Liquidated damages are where a specific, usually pre-agreed, sum is requested, which must correspond to a genuine pre-estimated amount for compensation of a probable delay. Thus, under common law, any general wording in standard forms providing for a specific amount or percentage of the contract amount being due for delay (penalty) will be void, because it cannot be pre-estimated as per Jaeger and Hok (2010). LD covers comprehensively for all damages resulting from late completion delay.

2.6.7. Claims

“In common law based contract forms it is usual to provide a set of claim-management rules” as per Jaeger and Hok (2010). Compliance with such type of management rules is essential since in general non-compliance with claim management rules will lead to the dismissal of the concerned claim or may influence the proper assessment of the claim. It is therefore crucial to establish a well-organized claim management which requires experienced staff. Skill and care should be taken in order to establish a claim management which covers all contractual management requirements.

2.6.8. Dispute Resolution

“In most of the common law standard forms alternative dispute resolution mechanisms have been introduced. For a long time, only arbitration has been used as an alternative to national courts. But, today it is quite common to refer to mediation, dispute reviewing or dispute adjudication at a first step” Jaeger and Hok (2010). Accordingly, it is mandatory that parties involved to an international contract familiarize themselves with such modern forms of dispute resolution.

2.7. Advantages of Standard General Conditions of Contract

Standard General Conditions of Contract (Standard Form of Contract) in construction are being introduced with the major advantage of establishing the same understanding of conditions between actors in a project hence reducing valuable time spent on understanding the Conditions during individual negotiations. The advantages of Standard Form of Contract are not limited to the above; in fact, other advantages do exist (Shnookal, 2010):

1. Since Employers, Engineers and Contractors most probably have used such contractual form, this means that they are familiar with their rights and obligations that are enclosed in the said form of contract. Accordingly, efficiency in contract administration is greatly improved. The importance of the same is highly obvious in

international contracting where communication is relatively difficult and there is high probability of misunderstandings.

2. Since the Contractors are familiar with the Standard form in terms of risk allocation, the cost of tendering (on contractors) is normally reduced as Contractors understand that there is no hidden risk which may be the case when exploring terms that they are not familiar with. The cost of the same shall be reverted back to the Employers once a contract is entered.
3. Standard forms present “an impartial starting point from which the parties can negotiate from” (Shnookal, 2010, p11); the parties are familiar with the Standard form, the cost of negotiating the contract conditions is reduced since potential areas of disagreements within the terms are reduced keeping the Standard forms as benchmarks.
4. It is likely that the tender price be less for Standard forms since Contractors do not have to add the price of unforeseen risks that they are not familiar with or do not usually need to assume.

As per Jervis B.M. and Levin P (1988), the widespread use of these Standard forms is mainly due to three advantages that these standard forms entail:

1. They are more time efficient. It is faster to make additions, deletions, modifications to a standard familiar form than to draft a 50 page document from scratch.
2. They are cost efficient. It is much more affordable to buy a preprinted form than to hire a firm to draft the full conditions.
3. They offer more certainty. Their use over the years has allowed for improving these conditions, clearing ambiguities and misunderstanding, and achieving a more balanced responsibility allocation. Moreover, the terms and conditions have been repeatedly interpreted by courts which has in turn set precedence to future disputes of similar nature.

Based on the above analysis, the stated points form a possible justification for the wide spread and use of Standard Contract Forms.

2.8. The Regulatory Frame Work of Standard Conditions of Contract

As previously described in Chapter 1, in order to shed light on the importance of the Standard Conditions of Contract, it is worth examining the content of typical Standard Conditions of Contract to understand the extent of issues regulated by these conditions. For instance, and as per the Conditions of Contract for Construction, for Building and

Engineering Works designed by the Employer (FIDIC 1999, Red book), one of the Fédération Internationale Des Ingénieurs-Conseils (FIDIC) Conditions of Contract publications, the said conditions regulate, but are not limited to, the following:

- **General Provisions** (Definitions, Interpretation, Communications, Law and Language, Confidential Details, Employer's Use of Contractor's Documents, Contractor's Use of Employer's Documents etc.),
- **The Employer's Role** (Right of Access to the Site, Permits, Licences or Approvals, Employer's Financial Arrangements etc.),
- **The Engineer's Role** (Engineer's Duties and Authority, Delegation by the Engineer, Instructions of the Engineer, Determinations etc.),
- **The Contractor's Role** (Contractor's General Obligations, Contractor's Representative, Subcontractors, Assignment of Benefit of Subcontract, Co-operation, Safety Procedures, Quality Assurance, Site Data, Unforeseeable Physical Conditions, Rights of Way and Facilities, Avoidance of Interference, Access Route, Transport of Goods, Contractor's Equipment, Protection of the Environment, Electricity, Water and Gas, Employer's Equipment and Free-Issue Material, Progress Reports, Security of the Site, Contractor's Operations on Site etc.),
- **Staff and Labour** (Engagement of Staff, Rates of Wages, Persons in the Service of Employer, Working Hours, Facilities for Staff and labor, Health and Safety Contractor's Superintendence, Contractor's Personnel, Records of Contractor's Personnel and Equipment, Disorderly Conduct),
- **Plant, Materials and Workmanship** (Manner of Execution, Samples Inspection, Testing, Rejection, Remedial Work, Ownership of Plant and Materials etc.),
- **Commencement, Delays and Suspension** (Commencement of Works, Time for Completion, Program, Extension of Time for Completion, Delays Caused by Authorities, Rate of Progress Delay Damages, Suspension of Work, Consequences of Suspension, Payment for Plant and Materials in Event of Suspension, Prolonged Suspension, Resumption of Work etc.),
- **Tests On Completion** (Contractor's Obligations, Delayed Tests, Failure to Pass Tests on Completion etc.),
- **Employer's Taking Over** (Taking Over of the Works and Sections, Taking Over of Parts of the Works, Interference with Tests on Completion),
- **Defects Liability Period Procedures** (Completion of Outstanding Work and Remedying Defects, Cost of Remedying Defects, Extension of Defects Notification

Period, Failure to Remedy Defects, Removal of Defective Work, Right of Access, Performance Certificate, Unfulfilled Obligations, Clearance of Site etc.),

- **Measurement And Evaluation** (Works to be Measured, Method of Measurement, Evaluation, Omissions etc.),
- **Variations And Adjustments** (Right to Vary, Value Engineering, Variation Procedure, Provisional Sums, Adjustments for Changes in Legislation, Adjustments for Changes in Cost etc.),
- **Contract Price And Payment Details** (The Contract Price, Advance Payment, Application for Interim Payment Certificates, Schedule of Payments, Issue of Interim Payment Certificates, Payment, Delayed Payment, Payment of Retention Money, Statement at Completion, Application for Final Payment Certificate, Discharge, Issue of Final Payment Certificate, Cessation of Employer's Liability etc.),
- **Termination by Employer** (Notice to Correct, Termination by Employer, Valuation at Date of Termination, Payment after Termination, Employer's Entitlement to Termination etc.),
- **Suspension And Termination By Contractor** (Contractor's Entitlement to Suspend Work, Termination by Contractor, Cessation of Work and Removal of Contractor's Equipment, Payment on Termination etc.),
- **Risk and Responsibility** (Indemnities, Contractor's Care of the Works, Employer's Risks, Consequences of Employer's Risks, Intellectual and Industrial Property Rights, Limitation of Liability etc.),
- **Insurance Perspective** (General Requirements for Insurances, Insurance for Works and Contractor's Equipment, Insurance against Injury to Persons and Damage to Property, Insurance for Contractor's Personnel etc.),
- **Force Majeure Details** (Definition of Force Majeure, Notice of Force Majeure, Duty to Minimize Delay, Consequences of Force Majeure, Force Majeure Affecting Subcontractor, Optional Termination, Payment and Release, Release from Performance under the Law etc.),
- **Claims, Disputes and Arbitration Procedures** (Contractor's Claims, Appointment of the Dispute Adjudication Board, Failure to Agree Dispute Adjudication Board, Obtaining Dispute Adjudication Board's Decision, Amicable Settlement, Arbitration, Failure to Comply with Dispute Adjudication Board's Decision etc.).

From the above detailed review, it can be noted that the Standard General Conditions of Contract are of major importance since the same, as proven above, play a main regulatory role at the various project interfaces during project execution which mandates a particular attention and proper tuning during the project award stage through to its corresponding Particular Conditions of Contract.

2.9. Overall Structure of Standard Forms

In the previous sections, the role of Conditions of Contract as a regulatory framework was proven. The regulatory framework characteristic is achieved through a specific overall structure that categorizes the controls of each and every aspect of the standard form sections. For instance, and as an example of the overall structure of Standard Forms, the structure of the Conditions of Contract for Construction For Building and Engineering Works designed by the Employer (FIDIC 1999, Red book), one of the Fédération Internationale Des Ingénieurs-Consueils (FIDIC), shall be investigated below.

The aforementioned standard form is subdivided into twenty main clauses that are sequenced as follows:

- **Section 1:** The General Provisions include a set of definitions; for instance first of the Contract itself and the documents, specifications. Second, the Persons involved in the Contract including the Engineer, the Dispute Adjudication Board, the Employer, the Contractor. Third, this section also includes the dates and times for Commencement and Completion together with Taking Over and Performance certificates. Fourth, Money terms, including the “Accepted Amount” and the “Contract Price”. Finally, there are two more groups of definition, one covering Works and Goods, defining, among other things, the “Contractors Equipment” and differentiating it from the Permanent Works that should be executed using the equipment. The Definition section also considers interpretation, communications, notices, choice of law and languages, confidentiality and legality.
- **Section 2:** The second section is dedicated for the Employer’s duties and his personnel. This section ends with a sub-clause dealing with the Employer’s claims against the Contractor.
- **Section 3:** The third section is dedicated to define the Engineer’s role whereby the *“Engineer shall make a fair determination in accordance with the Contract, taking due regard of all relevant circumstances.”*

- **Section 4:** The fourth section deals with the Contractor and his responsibilities whereby the Contractor General Obligations, Contractor's Representative, Subcontractors, Assignment of Benefit of Subcontract, Co-operation, Safety Procedures, Quality Assurance, Site Data are all considered.
- **Section 5:** Section 5 is dedicated to Nominated subcontractors. This section starts with a definition of nominated Subcontractor and ends with the Evidence of payments.
- **Section 6:** Section 6 deals with Staff and Labour. This section deals with working hours and facilities with the corresponding rates and conditions. Also, this section includes the requirement for a monthly report of Contractor's Equipment, as well as his deployment of labour.
- **Section 7:** Plant, Materials and Workmanship are the theme of section 7. It is of the essence to note that Plant is any machinery, vehicles, equipment intended to form part of the Permanent Works.
- **Section 8:** this section deals with time related issues in a contract i.e., commencement time, time for completion, and extensions of time, also include provisions for detailed programme preparation. This section provides also for delay damages, work suspension, prolonged suspension payment and the like.
- **Section 9:** this section considers tests on Completion and provides for delayed tests and concludes with the failure to pass tests on completion scenario.
- **Section 10:** this section is dedicated for the Employer's taking over. It includes also the taking over of sections of the Works and the corresponding certificates for any part of the permanent works.
- **Section 11:** this section considers the Contractor's liability for defects after taking over. This section starts with the completion of outstanding works and remedying defects therein and ends with the contractor obligation to clear the site. This section also considers the Performance certificate that is normally issued when defects have been remedied.
- **Section 12:** this section deals with Measurement and Evaluation. The methods of measurement including the valuation of omissions from the works are considered in this section.
- **Section 13:** Variations and adjustments are dealt with in this Section. This section also includes a provision of "Value Engineering" for the Contractor to make proposals

to accelerate completion, to save cost (in building, maintaining or operating) or benefit the Employer.

- **Section 14:** The price and payment procedures are considered in this section. Advance payment, interim certificates, final certificates and retention money are also considered.
- **Section 15:** This section deals with the termination by the Employer. The right of the Employer to terminate depends upon default by the Contractor.
- **Section 16:** This section deals with the suspension and termination by the Contractor. The right of the Contractor suspend Works may follow upon prolonged suspension. The last part in this section considers Contractor's payment on termination.
- **Section 17:** this section deals with risk and responsibilities to be allocated to both the Employer and Contractor. This section starts with indemnities and ends with limitations of liabilities.
- **Section 18:** this section is the section dealing with insurances
- **Section 19:** Section 19 defines Force Majeure and the corresponding consequences.
- **Section 20:** this section is the last Section of this standard form. This section deals with Claims, Dispute and Arbitration.

The above sections represent a typical standard form parts example that starts from basic definitions and ends with claims and disputes.

2.10.The Conditions of Particular Applications / Modifications to Standard Forms

The Particular Conditions need to cover all project details and particularities including any modifications of the General Conditions, except those modifications to be specified in the Appendix to Tender (Jaeger and Hok, 2010). As per FIDIC issued publications, all of the FIDIC Books contain a Guide on the Preparation of it corresponding Particular Conditions. These guides already comprise sample clauses for the proper alteration of the contract and give clear wording and guidance to the parties to do so.

FIDIC Guide to the use of Conditions of Contract for Works of Civil Engineering construction, 1989, noted that in the preparation of the Conditions FIDIC recognized that:

“While there are numerous Clauses which will be generally applicable there are some Clauses which must necessarily vary to take account of the circumstances and locality of the Works. The Clauses of general application have been grouped together in this document and are referred to as Part I — General Conditions. They have been printed in a form which will facilitate their inclusion as printed in the contract

documents normally prepared. The General Conditions are linked with the Conditions of Particular Application, referred to as Part II, by the corresponding numbering of the Clauses, so that Parts I and II together comprise the Conditions governing the rights and obligations of the parties.”

Also, the said guide notes that Part II must be specially drafted to suit each individual Contract accordingly, Part II - Particular Conditions of Contract contains modifications or amendments made to the Part I - General Conditions of Contract which are specific to this Contract. Clauses that do not contain any changes are therefore normally not mentioned therein.

As previously noted in section 1.3.2, The Particular Conditions needs to be introduced, as per FIDIC Fourth Edition reprint 2011, for the following reasons:

1. Where the General Conditions of Contract requires further information to be included in the Particular Conditions without which the conditions are not complete.
2. Where the General Conditions of Contract requires supplementary information to be included in the Particular Conditions without which the conditions would still be complete.
3. Where the locality and circumstances of the scope of works necessitate additional clauses to the General Conditions of Contract.
4. Where the law of the country in which the works to be executed necessitates introducing modifications to the General Conditions of Contract.

Accordingly, and as per point 1 noted above, it can be concluded that the introduction of modifications to the standard form is a must and not an option.

2.11. Dispute Causes and Factors

As noted in Chapter One, Fenn (2006) conducted an exhaustive study of previously done research in relation to causes of disputes. A chronological listing of his findings is shown in Appendix A. Fenn considered 36 publications in relation to dispute causes. Some of the reasons that were found related to the used conditions of contract the same has been reflected internationally by Lewis et Al. (1992), Jergeas & Hartman (1994), Lee (1994), Jones (1994), Hu (1998), Wang (2001), Kheinde & Aiyetan (2002), Lo (2002), Yan (2002).

From a regional perspective, Assaf and Al-khalil (1995) provided a detailed list of 56 causes of disputes in relation to delay based on their conducted survey in Saudi Arabia for large buildings. Their study included among other issues, delay in the special manufacture of the building material, shortage of labour, equipment failure, equipment shortage, unskilled

operators, slow delivery of equipment, equipment productivity, financing by Contractor during construction, delays in Contractor's progress payment by Owner, cash problems during construction, design changes by Owner or his agent during construction, design errors made by designers, obtaining permits from municipality, obtaining permits for labourers, excessive bureaucracy in project Owner operation, building code used in the design of the project, preparation and approval of shop drawings, waiting for sample material approval, preparation of scheduling networks and revisions, lack of training personnel and management support, lack of database in estimating activity duration and resources, judgement of experience in estimating time and resources, project delivery systems used, hot weather effect on construction activities, insufficient available utilities on site, the relationship between different subcontractor's schedule, the conflict between the consultant and the Contractor, uncooperative Owners, slowness of the Owner decision making process, insufficient communication between Owner and designer at the design phase, unavailability of professional construction management, inadequate early planning of the project, inspection and testing procedures used in the projects, errors committed during field, application of quality control based on foreign specification, controlling subcontractors by general Contractors in the execution of the works, and legal disputes between various parties.

A simple review of the above clauses would reveal their interrelationship with the conditions of contract being the regulatory framework of the project. Hence, if the conditions of contract were drafted to regulate such issues, there would be left minimal ground for disputes.

2.12. Project Performance Criteria

Olsen (1971) almost 50 years ago suggested Project Success to be built on cost, time and quality. Wright (1997) reduces that list and considers the more important two parameters to be time and budget. Many other writers: Turner(1993), Morris & Hough (1987), Wateridge (1998), DeWit (1987), McCoy (1987), Pinto and Slevin (1988), Saarinen (1990) and Ballantine (1996) have over the years reconfirmed that cost, time and quality should be used as success criteria, but not exclusively.

Alter (1996) differentiates between process and organizational goals. To him these two parameters are answered by the two questions 'did they do it right' and 'did they get it right'. Baccarini (1999) continues along the same path and describes project success to consist of two separate components, namely project management success and project product

success. As such the project success is calculated as the combined success of each. He defines each as follows:

- Project Management Success “focuses on the project management process and in particular on the successful accomplishment of the project with regards to cost, time and quality. These three dimensions indicate the degree of the ‘efficiency of project execution’ (Pinkerton, 2003).”
- Project Product Success “focuses on the effects of the project’s end-product. Although project product success is distinguishable from project management success, the successful outcomes both of them are inseparably linked. ‘If the venture is not a success, neither is the project’ (Pinkerton, 2003).”

A study conducted by De Wit (1988) again identifies perspectives for the project success: the macro and the micro viewpoints. The micro viewpoint considers project goals such as time, cost, performance, quality and safety. The construction phase is the basis of this viewpoint. The micro viewpoint is considered by the contracting parties namely the owner/developer and the contractor. It examines whether the original project concept was achieved or not. Accordingly, it is concerned with the first and last project phases namely the conceptual phase and the operation phase as shown in Figure 1 below. The macro viewpoint is considered by the owner, users, stakeholders and general public. It is concerned with completion criteria such as economy, management, supervision and weather and satisfaction criteria that include convenience, location, prestige, parking, and cost whereas the micro viewpoint is determined based on the completion criteria. In cases where high levels of satisfaction are achieved completion shortcomings are overlooked at the macro viewpoint level. The famous Sydney Opera House project for example spanned over 15 years and took 14 times the original budget. It can be considered as an example of achieving satisfaction at the macro level but is a failure at the micro level (Lim and Mohamed, 1999).

Westerveld (2003) compiles critical success criteria defined in previous literature, these criteria were defined in six organisational areas as shown in Table 3 below. Similarly, project success factors are categorised as shown in Table 4. His study concludes that for the project to be successful choices made on the organizational areas have to match with the project goals and the external factors of the project which include project manager and team members, project nature, parent organization, external environment.

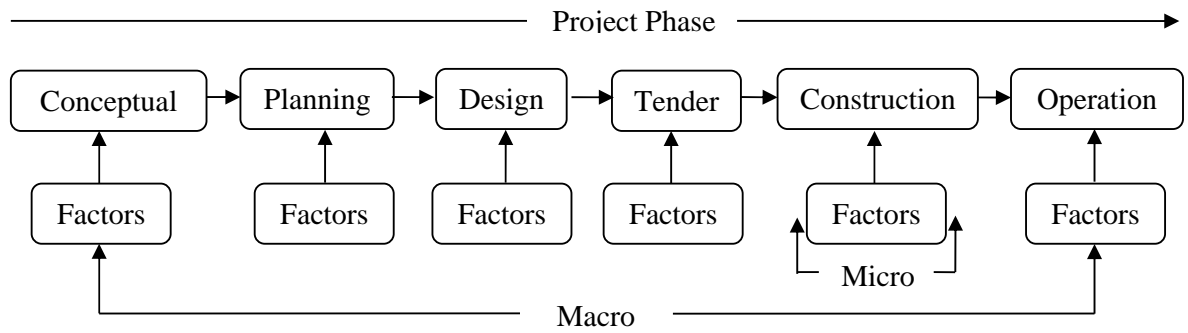


Figure 1 Building Blocks for project lifecycle by Lim and Mohamed's (1999)

Table 3 Project Success Factors (Westerveld, 2003)

Description	Explanations
Leadership and Team	Represents the way the project manager runs the project and how tasks and responsibilities are divided. Leadership style of and co-operation in the project team greatly influence the working habits within the project organisation.
Policy and strategy	What are the project goals and how are they accomplished? Combining the interest of the stakeholders into an end-product.
Stakeholder management	How does the project interact with various stakeholders? The co-operation of the project organisation with external parties determines the place of the project in its environment.
Resources	Resources have to be utilised in an effective and efficient manner in order to achieve maximum benefit to the stakeholder involved.
Contracting	Each project organisation establishes contractual relationships. The choice of contracts and partners evolves around the tasks at hand and the competencies of contracting parties.
Project management: Scheduling, Budget, Organisation, Quality, Information, Risks	How does the operational control of the project take place? The traditional aspects of sound project control play a key role in this process.

Chua et al. (1999) used the analytical hierarchy process to examine the more critical success factors on a construction project. Using this approach, the success related factors are organized in a hierarchy with the goal of “construction project success” at the top. The objectives of project success as shown in Figure 2 are identified to be budget, schedule and quality and occupy the second level of hierarchy. The four main project aspects at the subsequent level are considered to be project characteristics, contractual arrangements and

project participants and Interactive Process. It is apparent that the conditions of contract are taken into account under contractual arrangement as one of the project success factors.

Table 4 Project Success Criteria (Westerveld, 2003)

Result area	Explanations
Project results Budget Schedule Quality	The original golden triangle of project goals. Almost all projects will have specific scheduling budget and quality constraints.
Appreciation by the client	The client initiates the project to fulfil a specific need. What aspects and factors does the client value in judging the success of the project?
Appreciation by the project personnel	The workers of the project will be concerned with reaching their personal goals as well as a good working atmosphere.
Appreciation by users	Users are concerned with their overall influence in the project and the functionality of the end product.
Appreciation by contracting partners	Contracting partners try to make a profit of the project. They are also concerned with getting new orders and learning possibilities.
Appreciation by stakeholders	Those parties that are not directly involved in the project but have a large influence. For example, environmental groups, citizens and government agencies. These parties manage their specific interest.

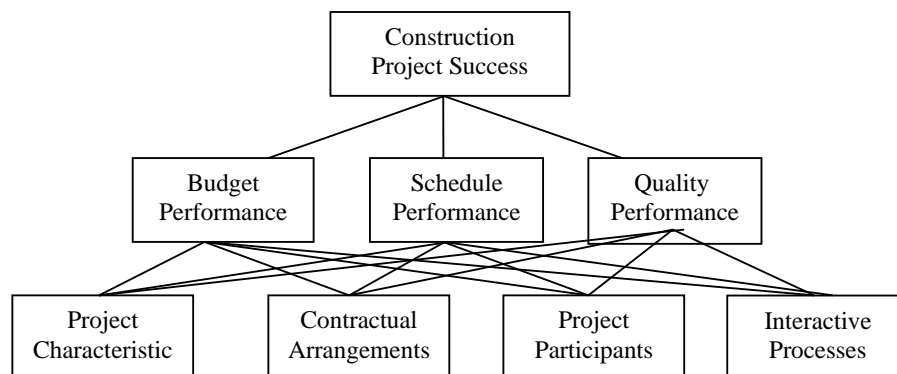


Figure 2 Hierarchical Model for Construction Project Success by Chua et al. (1999)

Iyer & Jha (2005) conducted a similar survey of the Indian construction projects to study factors affecting cost performance. Through a literature review of previous studies in the area they identified project success and failure attributes and ranked them by way of

mailing questionnaires to 450 top Indian construction industry professionals. Results showed that 23 critical failure attributes with the highest ranks went for poor human resource management and labour strike, negative PM and project participants, inadequate project formulation in the beginning, vested interest of client representative in not getting the project completed in time, conflicts between PM and top management. Again it is further proven from these results that conditions of contract that form part of project formulation can be a critical failure attribute.

Dissanayaka & Kumaraswamy (1999) study factors affecting time and cost performance in Hong Kong Building projects mainly categorized into procurement and non-procurement related factors. The project performance measures were considered to be time, cost, quality and participant satisfaction. Significant factor groups associated with time and cost over-runs were identified to be procurement systems, project characteristics, team performance, client/client representative characteristics, and contractor characteristics. These were further analyzed using multiple linear regression and artificial neural network techniques. In his study, formulation of a good contract document is identified to be a one of the most important factors to project success.

The above confirms that major project management success criteria are the time, cost and quality. This is further proven in conclusion reached by Atkinson (1990) after an exhaustive examination of success criteria. So 50 years after Oilsen (1971) first declared it, the success definition of project management is still built on the Iron Triangle of cost, time and Quality.

The major project success factors identified above were the procurement methods, the management abilities, the positive attitudes among participants, adequacy of contract documents. The latter encompasses the Conditions of Contract.

2.13. Overview of the Construction Industry in the Middle East Region

The Middle East region connects the continents of Africa, Asia, and Europe. The definition of the countries forming the Middle East is not well defined to the extent that not everyone agrees as to what countries can be labeled "Middle Eastern". The countries that are normally referred to being middle Eastern are: Bahrain, Cyprus, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia KSA, Syria, the United Arab Emirates, and Yemen (Gunderson 2003).

2.13.1. Construction in the Middle East

Comprising some of the spectacular skyscrapers to artificial floating island homes, state of the art large retail malls, major residential and commercial developments, the construction industry continues to remain at the top of Middle Eastern countries agenda in their quest to create an alternative to the predominantly oil based economy. During the third quarter of 2011, the value of construction contracts awarded reached USD 36.78 billion awarded in the second quarter of the same year (Ventures Middle East, 2011).

To identify the distribution of construction projects by countries, Figure 3 indicates Projects by Country and Status of Construction.

From a different perspective, within the Middle East region, the construction market in Saudi Arabia comprises the largest construction market with multibillion dollar projects under way and many more being still in the planning stage by the private and public sectors, (Mohammed Al-Nagadi, 2011), which is in line with Figure 3.

During 2011, Saudi Arabia's construction sector indicated a double digit growth of 11.6% in 2011 if compared to 7.8% in 2010, (Bank Audi Saradar, 2012), reflecting a positive increasing trend in the construction market which implies additional use of construction contracts and imposes additional challenges to the contractual forms. A major key driver in Saudi Arabia's construction industry is the shortage of supply and escalating demand in the housing market. In March 2011, King Abdullah released a plan to build 500,000 affordable homes within the Kingdom worth US\$ 66.7 billion (Bank Audi Saradar, 2012).

Another new dimension added to Saudi Arabia construction projects is the concept of economic cities with currently four being constructed (King Abdullah Economic City, Jazan Economic City, Prince Abdul Aziz Bin Musaед Economic City, Knowledge Economic City being) with a value of around USD 50 Billion, and two more in the design and planning stage (North Economic City, Easter Province Economic City) (Saad Al Adhami, 2011).

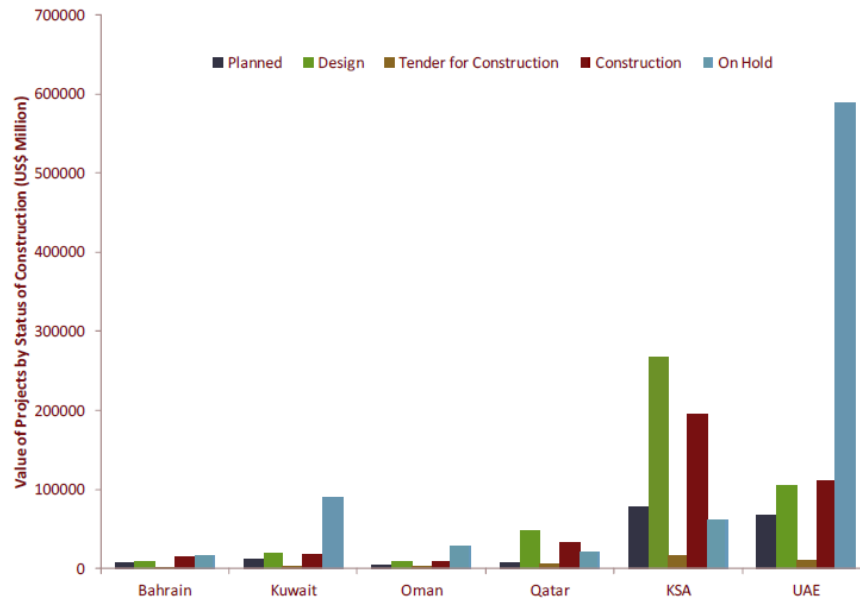


Figure 3: Projects by Country and Status of Construction (US\$ Million) September 2012
(Ventures Middle East, 2012)

2.13.2. Construction Disputes Observation

According to EC Harris 2013, an International Built Asset Consultancy, the construction disputes in the Middle East are more than double the global average, the same was attributed to a failure to properly administer the contract, failure to understand and/ or comply with the parties own contractual obligations, its contractual which indicate additional urgency to further investigate the Conditions of Contracts being used (EC Harris, 2013).

2.14. Summary

This chapter has provided the theoretical bases of this study. It started by examining the standard forms general background information then the overall context of modifications and project performance. The final section was dedicated to describe the Middle East construction industry circumstances.

CHAPTER 3
RESEARCH METHODOLOGY
AND DESIGN

CHAPTER 3 - RESEARCH METHODOLOGY AND DESIGN

3.1. Introduction

In the literature, there is common agreement that research methodology is an approach which provides any researcher with the required tools to complete the research successfully. As per Crotty (2003), in order to complete rational and coherent research, a researcher should carefully select an approach that directs the methods employed to answer the research inquiry. From the perspective of Creswell (2009), it was defined that research methodology is the systemic approach a research adopts to accomplish the research aim. In line with Creswell, Silverman (2010) noted that research methodology is a specific approach which researchers select to help in mastering the execution of research including three fronts being planning, data gathering and data analysis.

This chapter is dedicated to discuss the methodology selected to answer the research inquiry in this study. The possible choices which were available will be presented, followed by a discussion of the choices made and a justification of the selection in terms of research models, research philosophy, data collection methods and data analysis techniques. Also, this chapter addresses research design and processes adopted in this research.

3.2. Research Models

At the start of any research, the researcher needs to critically and carefully think about the nature of the research stages and the events that would be included in the research design. Unfortunately, investigating the literature to conclude on a final and clear answer on this subject would not be suitable due to the clear divergences between scholars about the names, the order and the nature of the events which should be included in a research design. For instance, from the perspective of Crotty (2003), research should be divided to include four elements, which inform one another, being: epistemology; theoretical perspective; methodology and method. The relationship between all four is presented in Figure 4.

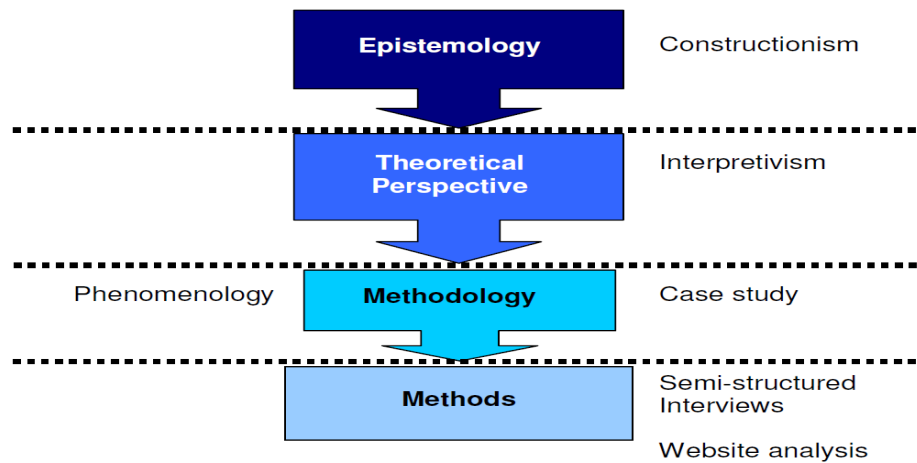


Figure 4: Crotty's Research Model- Adapted from Crotty (2003)

The nested or the hierarchical model of Kagioglou et al. (1998) listed only three elements: research philosophy, research approach and research technique as highlighted in Figure 5.

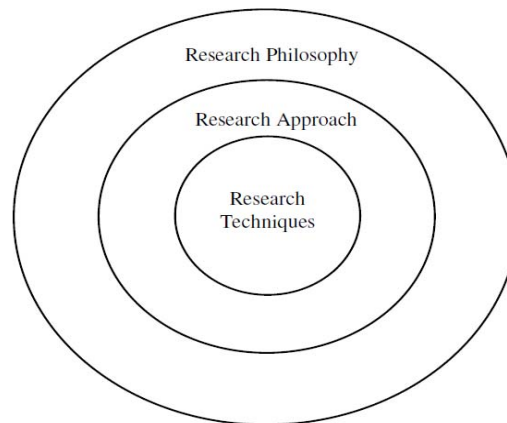


Figure 5: Nested Model or Hierarchical Model- Kagioglou et al.(1998)

According to the nested model exhibited in Figure 5, it seems that philosophy is understood as one set of different perspectives and thus Kagioglou et al. (1998) did not distinguish between any specific classifications. Hence the focus was mainly on boosting the inner research approaches and research techniques.

Saunders et al. (2009) extended this listing into an onion model which includes: philosophies, approaches, strategies, choices, time horizons, techniques and procedures as depicted in Figure 6. Also, according to the said figure, it is noticeable that Saunders et al. (2009)

considers various philosophical assumptions including positivism, realism, interpretivism and pragmatism, which differs from approaches which can be either inductive or deductive.

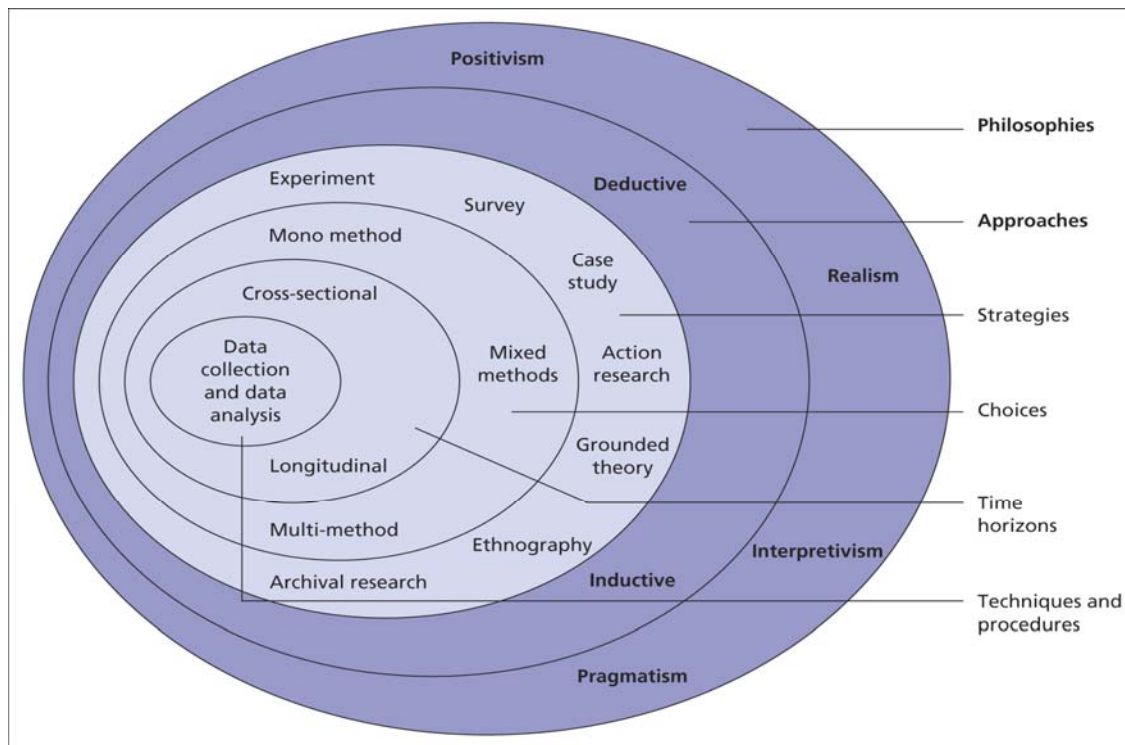


Figure 6: Research “Onion”- Methods for business students, Saunders, Lewis & Thornhill, 2009, p.108

It is worth noting that both the onion research model and the nested model are connected in three major areas. These are: research philosophy, research approach and research technique.

This research follows Saunders et al.’s (2009) onion model because it is a systemic model which provides a clear guideline and helps the researcher to become familiar with the up-coming stages which thus means better understanding and simpler control while achieving the goals of the research.

3.3. Description of the Research Methodology

Saunders (2009) defined methodology to be “the theory of how research should be undertaken”. Yin (2003) noted that having well designed rigorous methodology “is the logical sequence that connects the empirical data to a study’s initial research questions and, ultimately to its conclusions”. Accordingly, the research methodology is divided into phases whereby the conclusions achieved from the former phase are inputted to the upcoming phase until the research aim is finally attained.

In order to best understand the research design being adopted and why that specific design is considered, Sanders (2009) expressed that there exists certain research process flexibility following an “Onion” like model whereby the research process encompasses six shells or layers: the research philosophy, the research approach, the research strategy, method choices, the time horizons and the data collection methods.

3.3.1. Research Philosophy

As per Saunders (2009), “Research philosophy is an over-arching term relating to the development of knowledge and the nature of that knowledge”. He noted that Research Philosophy has the following aspects: Positivism, Realism, Interpretivism and Pragmatism.

- Positivism: The stance of the natural scientist whereby “the end result of such research can be law-like generalizations similar to those produced by physical or natural scientists” (Remenyi *et al.* 1998).
- Realism: Based on the belief that a reality exists that is independent of human thoughts and beliefs.
- Interpretivism: The role of the interpretivist is to seek to understand the subjective reality of those that they study in order to make sense of and understand their motives, actions and intentions.
- Pragmatism: Research philosophy that employs the thinking of all the other philosophies without adopting a single position.

As explained within Chapter 1 of this thesis, this research investigates the modifications being introduced to the standard contract clauses in the construction industry in the Middle East. Accordingly, it requires understanding the different views of the people regarding why standard conditions of contracts are modified, their implications etc. Therefore, this research falls within the interpretivism research philosophy.

3.3.2. Research Approach

Bryman (2001) stated that it is essential for a researcher to base the study on a theory to complete a research study successfully. The value of the theory comes from its influences on the design of a research project. Bryman and Bell (2003) believed that the main purpose of identifying an approach to research is to understand the nature of the interaction between the studied social phenomenon and the related theory. Saunders *et al.* (2007) distinguished

between deductive and inductive approaches. Gorman & Clayton (2005) converged with Saunders et al. (2007). Saunders (2009) also explained two different approaches to conduct the research: deductive and inductive. In a deductive approach, the researcher develops a certain hypothesis and then designs a research strategy to test the developed hypothesis. This is also known as the 'top-down' approach where by the researcher begins with a broad area and moves into more specific research area. On the other hand, the inductive approach, also known as the 'bottom-up' approach, is where the researcher reaches a certain theory as a result of data analysis. That is the researcher moves from a specific observation to formulate a theory (Saunders et al, 2012).

Based on the above discussions, it can be noted that this research was more towards the inductive approach. Due to the lack of availability of literature related to Standard Conditions of Contracts use within the Middle-East region, the researcher had to establish the most commonly used conditions of contracts within the Middle-East region from the primary data itself. Having identified that, the researcher further developed and analyzed the most commonly modified clauses and their implications to make the recommendations pertaining to the study.

3.3.3. Research Strategy

According to Saunders (2009), research strategy is a general plan that focuses on how the researcher will go about answering the research questions. From the perspectives of Bryman (2008) and Punch (2005), a research strategy is the academic approach by which researchers intend to tackle the research in order to answer the research questions in a social context. In the literature, there is considerable agreement that a research strategy can be either qualitative or quantitative. Saunders (2009) noted that, in quantitative research, research tends to collect data in the form of numbers whereas in qualitative research the intention is to collect data in the form of opinions, perspectives and conceptions. Creswell (2009) suggested that, although each approach can be used to answer specific questions and to investigate the phenomenon from a different angle, each one of these approaches has different biases and he suggested that using a mixed research methods approach can help the researcher reduce the possible biases of each approach.

As per Saunders (2009) there exists several research strategies upon which the research can be based. Those strategies can be experiments, surveys, case studies, action research, grounded theory, and ethnographical studies. Some research strategies are likely to be more

appropriate with one particular research than others, accordingly, the selection of the research strategy needs to reflect the research philosophy and approaches of the study.

- Experiments are related to scientific research that focuses on the measurement of a small number of variables and control of other variables.
- A survey research strategy involves the structured collection of data from a sizeable population.
- A case study research strategy involves the empirical investigation of a particular contemporary phenomenon within its real-life context, using multiple sources of evidence.
- Action research strategy is concerned with the management of a change and involving close collaboration between practitioners and researchers.
- Grounded theory is a strategy in which theory is developed from data generated by a series of observations or interviews principally involving an inductive approach.
- Ethnographical Research strategy focuses on describing and interpreting the social world through first-hand field study.

For the purpose of this study, it is apparent that the experiments strategy is not applicable since no variables are relevant to this study. Also, the survey research strategy, which involves the collection of data from a sizeable population, is not applicable since this research focuses on the main key industry participants. Furthermore, both experiments and survey research strategies are rooted within the positivism philosophy whereas the study under consideration is within the interpretivism philosophy. Even though action research and ethnographical studies are within the interpretivism stance, they are also not suitable for this study due to several reasons. The action research strategy that deals with the management of a change and involves a different process of trying to change something from the research is also not relevant to the aim and objectives of this research. The Ethnographical Research strategy that focuses on describing and interpreting the social world do not directly relate to the specificity of this study.

Hence, the most suitable research approach that was used to respond to the research inquiry and therefore which had further examination was the case study. This research deals with a particular contemporary phenomenon (modifications introduced to the Standard form of Contract) within its real-life context, using multiple sources of evidence. Further, case

studies are within the interpretivist research philosophy, as per Saunders (2009), and so this was the most logical design. Also, case studies provide the means of using more than one data collection technique which indeed makes the case study approach more suitable. Figure 7 (below) shows the position of the case study approach with regard to research philosophies, assumptions, approaches and strategies.

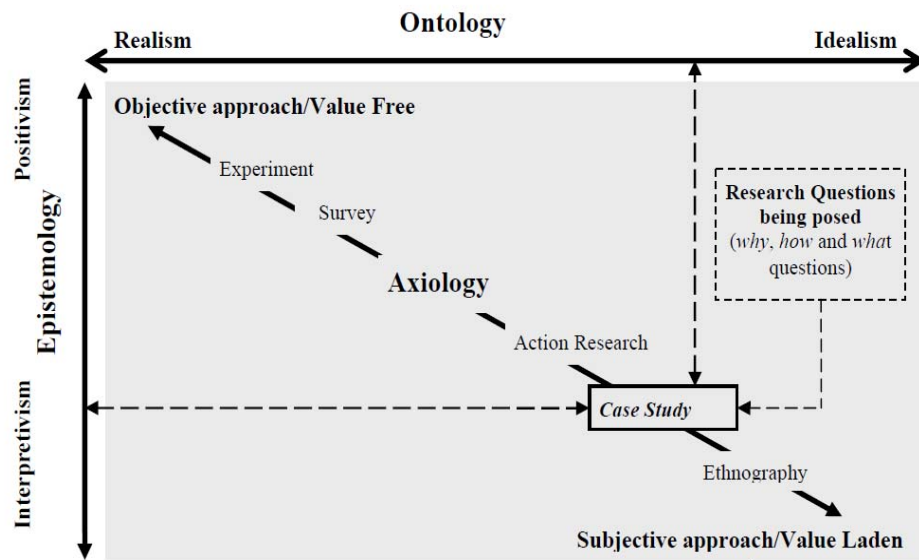


Figure 7: The Position of the Case Study Approach with Regard to Research Philosophies, Assumptions, Approaches and Strategies

3.3.4. Case Study: Focused Approach

3.3.4.1. Definitions and use of the Case Study

Yin (2009) provided a definition of a case study as “an empirical inquiry that investigates a contemporary phenomenon in depth and within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident” (P.18). Yin also added that such an approach has the strength to assist researchers in investigating an elaborate phenomenon in a natural setting. Yin (2009) also noted that a case study approach should be used when questions such as “how” and “why” are being asked and that it is preferable to use this approach to answer questions about a contemporary set of events over which the researcher has no control.

Denscombe (2010) argued that the case study helps a researcher to examine the studied phenomena or real-life situations. It also allows the researcher to gain an in-depth picture of

the relationships and processes within the phenomenon. Therefore, a case study is more common in qualitative studies than in quantitative studies. From a different perspective, Huberman and Miles (2002) provided a broader benefit in that the case study approach allows the combination of both quantitative (questionnaires) and qualitative (interviews and documents) data to serve different purposes and to accomplish different aims.

3.3.4.2. The Design of the Case Study and the Unit of Analysis

Yin (2009) stated that it is vital that the case study design is identified before carrying out the research making sure that the selection takes on board the aim of the research and the questions. Identifying the design for the case study will allow a researcher to collect data accurately and make sense of the findings and of the link between them and the collected data. According to Yin (2009), the design can be: (1) single-case design, (2) multiple-case design. In terms of a single design the focus of the research will be on one case in order to confirm critical issues or to investigate a new and unique case. On the other hand, a multiple-case study allows a researcher to examine the phenomenon in more than one case and the possibility of comparing between the case study findings would be greater than that which a researcher can achieve in a one case design.

A single case study has been used for this study. According to Yin (2014), single case study can be used when investigating a critical, unusual, common, revelatory and longitudinal case. As FIDIC conditions of contracts are the mostly being used form of contract within the Middle East region, it is considered as a critical case for this study. According to Siggelkow (2007) and Farquhar (2012), a single case study is capable of covering a greater depth on understanding a phenomenon and is, therefore, appropriate for this study.

In terms of the unit of analysis, Ragin & Becker (1992) stated that the most critical component relates to the fundamental problem of defining what the “case” is that forms the unit of analysis. According to Yin (2009), the definition of the unit of analysis relates to the way in which a researcher has defined the initial research questions. In this research the unit of analysis is considered as “the large modifications introduced to standard conditions of contract”.

3.3.4.3. The Selection of the Respondents

According to Yin (2009), cases should be selected bearing in mind the purpose of the research. The aim of the study is to investigate the modifications introduced to the most commonly used Standard Conditions of Contract form in the construction industry within the

Middle East region to improve construction management performance; therefore the focus is on the large modification introduced to the standard contractual form with the boundary of the case study being the standard contractual form.

This research considers major stakeholders in the construction industry within the Middle East region. Also, this research considers all perspectives within any construction project to be represented by considering contractors, designers, project managers, and lawyers' points of view. Concerning the responders to be considered, this research covered the three largest Middle Eastern contractors, the two largest engineering consultancy firms, one of the largest project management consultancy services company, and one of the largest dispute and conflict resolution legal firms in the Middle East all have been in the field of construction for more than half a decade. The above seven organizations have a weighty presence within the construction industry in the Middle East and the data obtained from them was representative and reflected accurately the industry's perspective.

3.3.4.4. The Position of this Study

Since the main focus of the research is on the modifications being introduced to the Standard conditions of contract clauses, which represent a particular contemporary phenomenon as discussed earlier, the large modifications being introduced to the standard form of contract sub-clauses is the core of the case study. The same was investigated with the seven organizations participating in this study. Figure 8 provide details about the case study parameters.

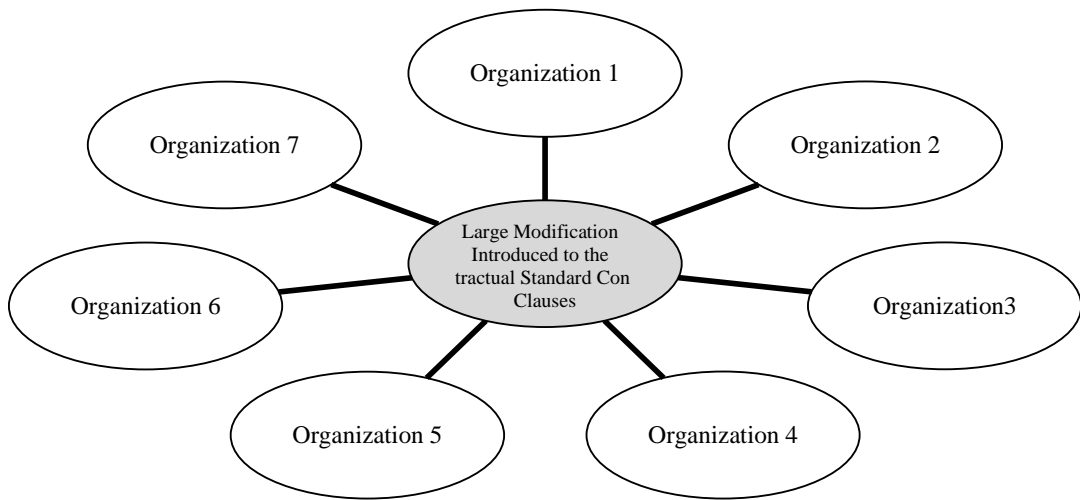


Figure 8: Case Study Parameters

3.3.5. Research Choices

Creswell et al.(1996) and Tashakkori and Teddlie (2003) stated that quantitative and qualitative research are not the only choices a researcher can make and they suggested the use of a mixed research approach which combines both approaches. According to Tashakkori & Creswell (2007), a mixed approach tends to involve the use of both quantitative and qualitative methods. Therefore, it can be defined as “*research in which the investigator collects and analyses data, integrates the findings, and draws inferences using both qualitative and quantitative approaches and methods in a single study or program of inquiry*” (P.12). This research considers a combination of qualitative and quantitative methods, throughout the five phases of this study, that are needed and specifically tailored in order to achieve the research aim and related objectives.

Also this research is considered a Descriptive and Explanatory research since the purpose is to identify a certain practice (descriptive) and then introduce recommendations in an attempt to improve practice, which may lead to the form of an explanatory study.

3.3.6. Time Horizon

According to Saunders (2009), “cross-sectional research is the study of a particular phenomenon (or phenomena) at a particular time, i.e. a ‘snapshot’” whereas “longitudinal study is the study of a particular phenomenon (or phenomena) over an extended period of time”.

This study adopts the longitudinal research since it assesses the contemporary modifications introduced to the Standard Contractual forms for the past 10 years starting in 2005 and ending in 2015.

3.3.7. Data Collection Techniques and Procedures

The phases and the data collection of this study are outlined below.

Phase I: Review via desk research the existing families of international Standard forms of Contracts that exist internationally in the construction industry.

Phase II: Review and identify which contract family was the most commonly used in the Middle East for the 10 years between 2005 and 2015. This was done through a questionnaire survey addressing major contractors, major design consultants, legal consultants, and project management services providers.

Phase III: Review and identify which Contractual Form of the Contract Family identified under Phase II was the most commonly used. This was also done through a questionnaire survey addressing major contractors, major design consultants, legal consultants, and project management services providers.

Phase IV: Examine and investigate the various particular conditions in clauses being introduced and identify the ones that were largely subject to modifications endangering the overall spirit of the original Standard Contract Form clause. This was done through detailed analysis which aimed at highlighting the contractual clauses that were subject to large modifications through the corresponding particular conditions.

The same was done by ranking all contractual clauses modifications on a scale ranging from One to Three via an author's defined indicator so called "MRI" "Modification Ranking Indicator".

- One: being not modified and not needing further analysis.
- Two: represents minor modifications to the Standard Contractual Form: those modifications that do not change the intent of the contractual clause. In fact, those modifications that are needed for completeness, clarity, and which do reflect project circumstances.
- Three: represents the contractual clauses that are majorly modified: those modifications that change the contractual clause intent such as full clause deletion, clause replacement, new constraints introduction through new clauses introduction, partial clause deletion and so on.

Then the sub-clauses whose majority MRI turned out to be Three were further considered using semi-structured interviews that were conducted to analyze the reasons governing the modifications. Semi structured interviews were conducted per modification per clause basis to identify the reasons the said modifications were introduced, and assess the implications and consequences of the same.

As previously noted, Phase IV was the core phase in this study. First modifications were collected from all seven participants. Then using questionnaire surveys and semi structured interviews, feedback from the seven key industry stakeholders was discussed. Questionnaire surveys and semi-structured interviews were addressed to

Contract Administrators, Chief Executive Officers, Lawyers, Quantity Surveyors and Project Managers. Table 5 shows the details of the participants to this research.

Before starting Phase IV of the study, the Modification Ranking Index (MRI) was developed and refined by obtaining feedback from the Advisor and the two experts who deal with contract management. At the beginning of this research it was envisaged to consider ranking all contractual clause modifications on a scale ranging from one to five. However, after receiving the comments from the Advisor and the two experts, it was decided to investigate only three levels: Non Modified, Minor/ slight Modifications, and large Modifications. Further, the semi-structured interview questions were piloted with the two experts and refined.

Phase V: Make recommendations in relation to the modifications being witnessed to be used by the various industry stakeholders. Figure 9 represents the sequence adopted between the various phases.

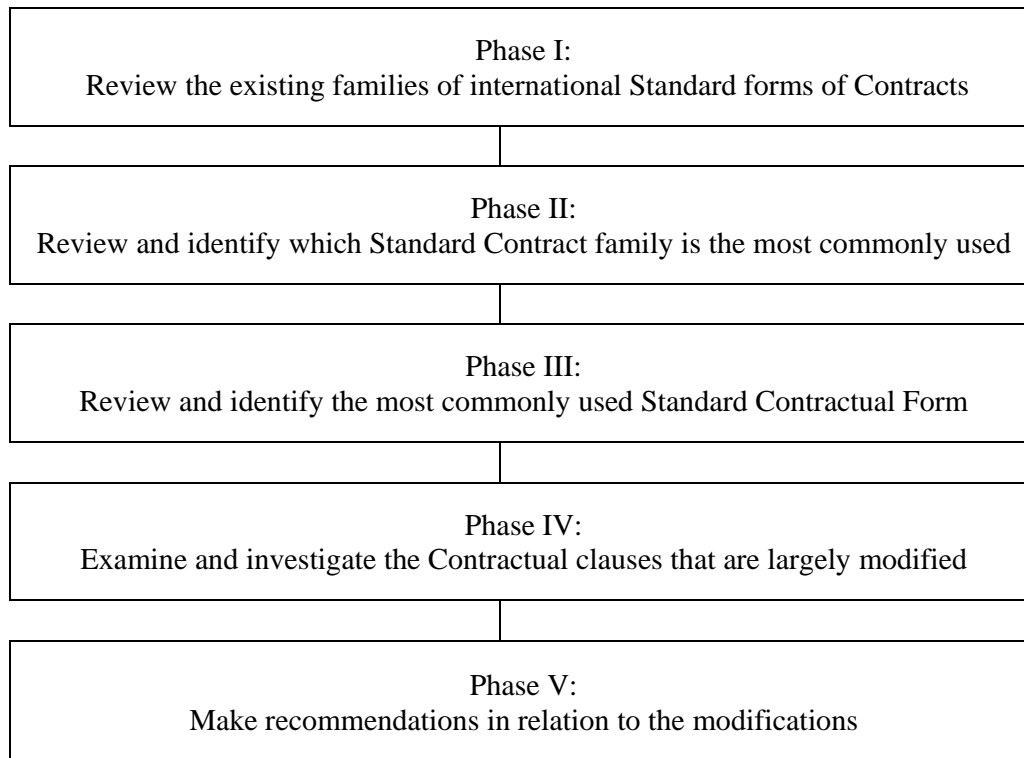


Figure 9: Research Phases Sequence

Table 5: Data Collection Details

	<i>Contract Administrator</i>	<i>Chief Executive Officer</i>	<i>Lawyer</i>	<i>Quantity Surveyor</i>	<i>Project Manager</i>
<i>Organization 1</i>	X (25 years' experience)				
<i>Organization 2</i>				X (29 years' experience)	
<i>Organization 3</i>		X (27 years' experience)			
<i>Organization 4</i>	X (33 years' experience)				
<i>Organization 5</i>	X (35 years' experience)				
<i>Organization 6</i>					X (31 years' experience)
<i>Organization 7</i>			X (25 years' experience)		

3.3.8. Data Analysis Techniques and Validation of the Findings

Phase II and III were quantitatively analyzed and ranked through the use of spread sheets using excel software.

Phase IV of this research ranked the modifications introduced to the Standardized Contractual Conditions into three levels through Modifications Ranking Indicator “MRI”, depending on the degree of modifications assessed; One being not modified and three highly modified. The data gathered through the semi-structured interviews to further investigate the clauses that were majorly modified (MRI-3) were analyzed by using content analysis. Content Analysis is a technique which “enables organization of large amounts of data into codes and categories” (GAP, 1996 as cited in September, 2001; Junginger, 1996) by transforming the meaning and effect of a certain extent qualitative data to quantitative, which is then incorporated to spread sheets for overall ranking. The said analysis is then forwarded for verification to a field expert.

Semi structured interviews then took place on a per modification per clause basis to identify the reasons the said modifications were introduced, and to assess the implications and consequences of the same. The literature review on a per clause basis was also conducted.

Phase V is the recommendation part of this research. In this phase, the reached recommendation is validated by seeking the input of the seven participants through survey questionnaire. Also, the recommendation was further audited by two field experts who have exhaustive experience in project management and contract administration.

It is of the essence to keep in mind that this study does not judge on the modification nature in terms of being proper or improper, since the same should be assessed and judged by the contracting parties themselves.

3.5. Summary

The main aim of this chapter was to highlight how this research has been conducted and why it was conducted in such a way following a specific methodological approach. It included looking at several aspects of research methodology and presented the journey that this research has gone through in order to achieve the aim and objectives of this study.

CHAPTER 4
RESEARCH FINDINGS

CHAPTER 4 - RESEARCH FINDINGS

4.1. Introduction

This chapter provides the outcome of Phase I, II, and Phase III surveys that were conducted to identify the most commonly used Standard Contractual Form in the absence of reported research addressing or identifying such aspects in the reported literature.

This chapter also provides the outcome of Phase IV analysis that was conducted to scale the extent of modifications introduced to the Standard Contractual Clauses.

4.2. Phase I: Review of the existing families of international Standard forms of contracts

Despite the fact that a desk research has been conducted to review and identify the existing families of international Standard forms of Construction Contract, the issued survey Appendix C addressed the issue of completeness of the reviewed families.

As stated in the literature review section, ten families of Standard contract were identified: The American Institute of Architects (AIA), Fédération Internationale des Ingénieurs-Conseils (FIDIC), The Joint Contracts Tribunal (JCT), Institution of Civil Engineers (ICE), The New Engineering Contract (NEC), Institution of Engineering and Technology (IET), The Association of Consultant Architects (ACA), BE Collaborative Contract, Consensus DOCS Contracts, and International Chamber of Commerce (ICC).

The survey results for Phase I did not reveal any additional family of Standard form of contract that is adopted within the Middle East region. Accordingly, the upcoming section is limited to the ten earlier identified families of Standard contract in the literature review section.

Appendix C shows the survey form used for Phase I and Phase II.

4.3. Phase II: Review and Identify which Standard contract family is the most commonly used in the Middle East.

The purpose of this section was to provide an indication of the most commonly used Standard contract family in the Middle East. The prepared forms were issued to the participants from the seven major construction organizations. The obtained data was then entered into a spread sheet for averaging. The results of the same indicated that the most commonly adopted family of Standard forms of Contract for the past 10 years is the “Fédération Internationale Des

Ingénieurs-Conseils” in French which is commonly known by FIDIC being The International Federation of Consulting Engineers, (Bunni, 2005), with more than 50% adoption against the accumulation of all the other families. The findings are summarized in Table 6 below.

Table 6: Average percent adoption of Standard Contract Families in the Middle East region

	International Standard Contract Family	Average Percent (%) Adoption	Organization 1	Organization 2	Organization 3	Organization 4	Organization 5	Organization 6	Organization 7
1	The American Institute of Architects (AIA)	18%	12%	15%	11%	35%	22%	15%	16%
2	Fédération Internationale des Ingénieurs-Conseils (FIDIC)	52%	45%	60%	72%	41%	38%	51%	57%
3	The Joint Contracts (Tribunal JCT)	12%	13%	14%	10%	6%	16%	13%	12%
4	Institution of Civil Engineers (ICE)	2%	3%	4%	0%	0%	4%	3%	0%
5	The New Engineering (Contract NEC)	8%	20%	0%	2%	10%	8%	1%	15%
6	Institution of Engineering and Technology (IET)	0%	0%	0%	0%	0%	0%	0%	0%
7	The Association of Consultant Architects (ACA)	0%	0%	0%	0%	0%	0%	0%	0%
8	BE Collaborative Contracts	4%	5%	2%	2%	6%	7%	6%	0%
9	ConsensusDOCS Contracts	3%	2%	5%	3%	2%	5%	4%	0%
10	International Chamber of Commerce (ICC)	1%	0%	0%	0%	0%	0%	7%	0%
	Total	100%	100%	100%	100%	100%	100%	100%	100%

Based on the above findings, it can be noted that the adoption rank of the international Standard contract family can be classified into the following ranking:

Rank 1: Fédération Internationale des Ingénieurs-Conseils (FIDIC)

- Rank 2: The American Institute of Architects (AIA)
- Rank 3: The Joint Contracts Tribunal (JCT)
- Rank 4: The New Engineering Contract (NEC)
- Rank 5: BE Collaborative Contract
- Rank 6: ConsensusDOCS Contracts
- Rank 7: Institution of Civil Engineers (ICE)
- Rank 8: International Chamber of Commerce (ICC)
- Rank 9: Institution of Engineering and Technology (IET)
- Rank 9: The Association of Consultant Architects (ACA)

It is of the essence to note that the 52% indicated in Table 6 for the FIDIC family of Standard contract forms reflects a high level of confidence in relation to the above ranking especially since it is almost triple the percent adoption of the family ranking second, being the AIA family of Standard contract with 18% adoption.

4.4. Phase III: Review and Identify the most commonly used Standard Contractual Form within that contract family (The FIDIC Family) in the Middle East region.

Phase II provided an indication about the most commonly adopted Standard contract family which is the FIDIC range of contracts, Phase III focuses on the FIDIC Standard Contract Forms in terms of adoption.

FIDIC was founded in 1913 by three countries. The founding member countries of the FIDIC were Belgium, France and Switzerland. FIDIC is known for producing Standard forms of contract for civil engineering construction, and mechanical and electrical plant. The suite of FIDIC contracts is well known by their colours, for instance: Conditions of Contract for Construction (“Red Book”), Conditions of Contract for Plant and Design-Build (“Yellow Book”), Conditions of Contract for EPC/Turnkey Projects (“Silver Book”), Short Form of Contract (“Green Book”) etc. The suite of contracts presented by FIDIC in 1987 were replaced in 1999 (fidic.org). Appendix D shows the survey form used for Phase III.

On a different note, the various Standard forms available reflect the nature of the adopted procurement strategy and the corresponding risk associated with each strategy. Figure 10 represents a simplified procedure for proper contract selection as being published by FIDIC.

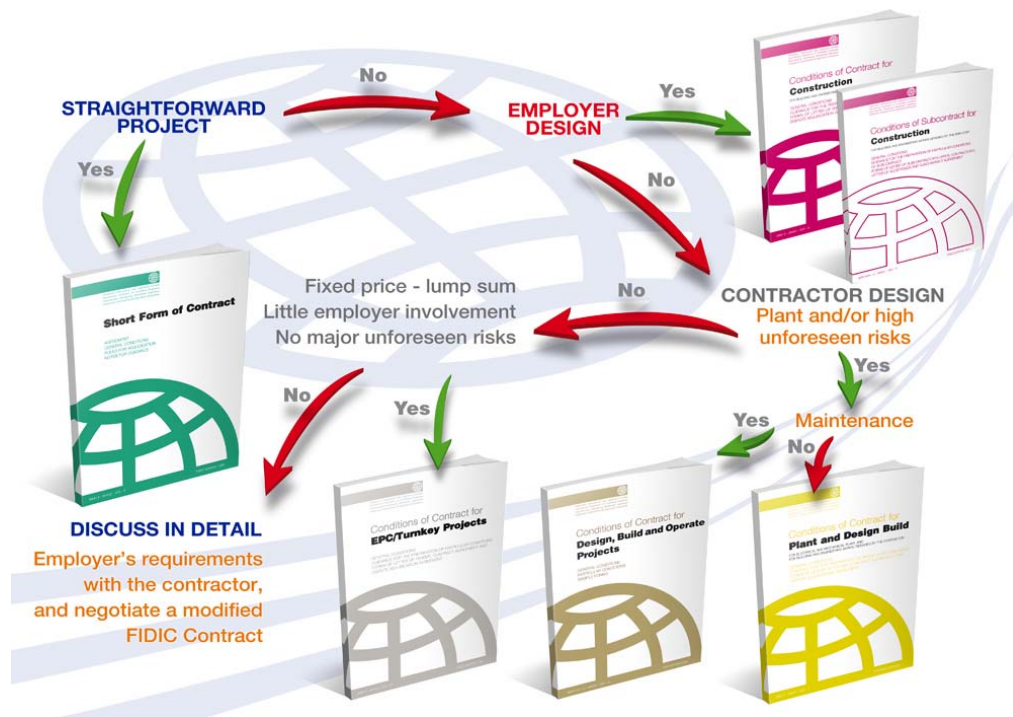


Figure 10: FIDIC Standard Contract Selection Procedure (fidic.org)

The result of the survey conducted to identify the most commonly used FIDIC Standard Contract Form is found in Table 7.

Table 7: Average percent adoption of FIDIC Standard Contract Forms in the Middle East region

	Standard Contract Form	Avg (%)	Organization 1	Organization 2	Organization 3	Organization 4	Organization 5	Organization 6	Organization 7
1	Conditions of Contract for Electrical and Mechanical Works including erection on site (Yellow Book) First Edition 1963 Third Edition 1987	0	0	0	0	0	0	0	0
2	Conditions of Contract for Works of Civil Engineering Construction (Red Book 4th) First Edition 1957 Fourth Edition 1987 Reprinted 1988 with editorial amendments Reprinted 1992 with further amendments Supplement to the 1992 Red Book published in 1996 and 2011	28	15	42	23	20	34	37	25
3	Conditional of Contract for Design-Build and Turnkey (Orange Book) First Edition 1995	4	4	5	3	4	4	4	4

	Standard Contract Form	Avg (%)	Organization 1	Organization 2	Organization 3	Organization 4	Organization 5	Organization 6	Organization 7
4	<i>Conditions of Sub-contract for Works of Civil Engineering Construction</i> <i>First Edition 1994</i>	3	0	1	3	5	3	4	5
5	<i>Short Form of Contract (Green Book)</i> <i>First Edition 1999</i>	1	0	0	0	0	4	3	0
6	<i>Conditions of Contract for Construction, for Building and Engineering Works, Designed by the Employer (Red Book 1999)</i> <i>First Edition 1999</i>	24	30	20	31	32	16	18	21
7	<i>Conditions of Contract for Plant and Design-Build for Electrical and Mechanical Plant, and for Building and Engineering Works, Designed by the Contractor</i> <i>(Yellow Book)</i> <i>First Edition 1999</i>	12	15	11	14	8	7	16	13
8	<i>Conditions of Contract for EPC Turnkey Projects (Silver Book)</i> <i>First Edition 1999</i>	6	12	0	3	8	7	0	12
9	<i>Form of Contract for Dredging & Reclamation Works (Blue Book)</i> <i>First Edition 2006.</i>	2	2	1	3	3	2	2	1
10	<i>Conditions of Contract for Construction: The Harmonised Multilateral Development Banks Form of Contract (Pink Book)</i> <i>First Edition 2005</i> <i>Third Edition 2010</i>	2	2	1	2	2	5	1	1
11	<i>Conditions of Contract for Design, Build and Operate Projects (Gold Book)</i> <i>First Edition 2008</i>	5	5	5	4	5	6	5	5
12	<i>Conditions of Subcontract for Construction (compatible with the 1999 Red Book)</i> <i>First Edition 2011</i>	13	15	14	14	13	12	10	13
	Total	100%	100	100	100	100	100	100	100

In addition to the books stated above, FIDIC also published the Client / Consultant Model Service agreement, Model Representative Agreement, Quality Based Selection for the Procurement and Consulting Services, Consultant Selection Guidelines, and other guides that relate to the published Standard forms and the Construction environment processes (fidic.org).

The survey indicates that the most commonly used Standard contract form for the past 10 years is the Conditions of Contract for Works of Civil Engineering Construction (Red Book 4th Edition 1987) with 28% then the Conditions of Contract for Construction, for

Building and Engineering Works, Designed by the Employer (Red Book 1999) with 24% adoption. Based on the above findings, Table 8 summarizes the adoption ranking of the Standard contract forms within the FIDIC family.

Table 8: Adoption Ranking of FIDIC Standard Contract Forms

Rank 1:	Conditions of Contract for Works of Civil Engineering Construction (Red Book 4 th Edition 1987) (28%)
Rank 2:	Conditions of Contract for Construction, for Building and Engineering Works, Designed by the Employer (Red Book 1999) (24%)
Rank 3:	Conditions of Subcontract for Construction (compatible with the 1999 Red Book) (13%)
Rank 4:	Conditions of Contract for Plant and Design-Build for Electrical and Mechanical Plant, and for Building and Engineering Works, Designed by the Contractor (12%)
Rank 5:	Conditions of Contract for EPC Turnkey Projects (Silver Book) (6%)
Rank 6:	Conditions of Contract for Design, Build and Operate Projects (Gold Book) (5%)
Rank 7:	Conditional of Contract for Design-Build and Turnkey (Orange Book) (4%)
Rank 8:	Conditions of Sub-contract for Works of Civil Engineering Construction (3%)
Rank 9:	Conditions of Contract for Construction: The Harmonised Multilateral Development Banks Form of Contract (Pink Book) (2%)
Rank 9:	Form of Contract for Dredging & Reclamation Works (Blue Book) (2%)
Rank 10:	Short Form of Contract (Green Book) (1%)
Rank 11:	Conditions of Contract for Electrical and Mechanical Works including erection on site (Yellow Book) (0%)

It is of note that the difference in the percent adoption between the ranked first and the ranked second Standard contract form appear to be around 4%, which is not that conclusive if compared to the findings under Phase II. But since the Conditions of Contract for Works of Civil Engineering Construction (Red Book 4th Edition 1987) is ranked first, the upcoming analysis needs to consider this Standard contractual form.

From a different perspective, it can be noted that FIDIC has re-printed and amended the Red Book 4th Editions 1987 several times; the last of which being in 2011 i.e. 24 years after being published. In fact, FIDIC acknowledged the continuing demand for the Fourth Edition 1987, accordingly decided to reprint and introduce some amendments as stated in FIDIC Fourth Edition reprint 2011.

Accordingly, the upcoming sections will focus on the Conditions of Contract for Works of Civil Engineering Construction (Red Book 4th Edition 1987).

4.5. Phase IV: Examine and investigate the contractual clauses and sub-clause Modifications.

In this phase, the particular conditions of contract for the Conditions of Contract for Works of Civil Engineering Construction (Red Book 4th edition) were collected, analyzed and ranked into three categories.

This section starts by presenting the modification ranking determined for each Contractual clause, and then emphasis is given for each category. The Non-Modified Clauses are first considered, then the Slightly Modified Clauses, later the Majorly Modified ones, and finally the additionally introduced Sub-Clauses.

4.5.1 Modifications Ranking Indicators (MRI) of Contractual Clauses

This section presents the modification ranking for each contractual clause. The same is done by ranking the introduced modifications into three levels through the Modifications Ranking Indicator “MRI”, depending on the degree of modifications assessed; One being not modified and Three being highly modified.

The following pages represent a table summarizing the MRI for every sub-clause for a given organization. The same is generated considering the various findings from every organization in relation to the modifications introduced to the sub-clauses of the Red Book 4th Edition 1987.

Table 9 below shows a summary of the Modifications Ranking Indicator (MRI) of the various contractual sub-clauses on a per organization basis. Then the arithmetical average MRI was calculated and the majority MRI was also determined. Both average and majority MRI converged to the same sub-clauses which were considered for further analysis.

Table 9: Modifications Ranking Indicator (MRI) of Contract Sub-Clauses

	Sources								
	Organization 1	Organization 2	Organization 3	Organization 4	Organization 5	Organization 6	Organization 7	Average MRI	Majority MRI
PART I - GENERAL CONDITIONS of CONTRACT									
Definitions and Interpretation									
1.1 Definitions	2	2	2	1	2	2	1	1.71	2
1.2 Headings and Marginal Notes	1	1	1	1	1	1	1	1.00	1
1.3 Interpretation	1	1	2	1	1	1	1	1.14	1
1.4 Singular and Plural	1	1	1	1	1	1	1	1.00	1
1.5 Notices, Consents, Approvals, Certificates and Determinations	1	1	1	1	1	1	1	1.00	1
Engineer and Engineer's Representative									
2.1 Engineer's Duties and Authority	2	2	1	2	2	1	1	1.57	2
2.2 Engineer's Representative	1	1	1	1	1	1	1	1.00	1
2.3 Engineer's Authority to Delegate	1	1	1	1	1	1	1	1.00	1
2.4 Appointment of Assistants	1	1	1	1	1	1	1	1.00	1
2.5 Instructions in Writing	1	1	1	1	1	1	1	1.00	1
2.6 Engineer to Act impartially	1	1	1	1	1	1	1	1.00	1
Assignment and Subcontracting									
3.1 Assignment of Contract	1	1	1	1	1	1	1	1.00	1
4.1 Subcontracting	1	1	1	1	1	1	1	1.00	1
4.2 Assignment of Subcontractors' Obligations	1	1	1	1	1	1	1	1.00	1
Contract Documents									
5.1 Language/s and Law	1	1	1	1	1	1	1	1.00	1
5.2 Priority of Contract Documents	2	2	2	1	2	1	2	1.71	2
6.1 Custody and Supply of Drawings and Documents	1	1	1	1	1	1	1	1.00	1
6.2 One of Copy of Drawings to be Kept on Site	1	1	1	1	1	1	1	1.00	1
6.3 Disruption of Progress	1	1	1	1	1	1	1	1.00	1
6.4 Delays and Cost of Delay of DWG	1	1	1	1	1	1	1	1.00	1
6.5 Failure by Contractor to Submit Drawings	1	1	1	1	1	1	1	1.00	1
7.1 Supplementary Drawings and Instructions	1	1	1	1	1	1	1	1.00	1
7.2 Permanent Works Designed by Contractor	1	1	1	1	1	1	1	1.00	1

	Sources								
	Organization 1	Organization 2	Organization 3	Organization 4	Organization 5	Organization 6	Organization 7	Average MRI	Majority MRI
7.3 Responsibility Unaffected by Approval	1	1	1	1	1	1	1	1.00	1
General Obligations									
8.1 Contractor's General Responsibilities	3	3	3	3	1	3	3	2.71	3
8.2 Site Operations and Methods of Construction	1	1	1	1	1	1	1	1.00	1
9.1 Contract Agreement	2	1	2	1	2	2	1	1.57	2
10.1 Performance Security	1	2	2	2	1	2	2	1.71	2
10.2 Period of Validity of Performance Security	1	1	1	1	1	1	1	1.00	1
10.3 Claims under Performance Security	1	3	3	3	3	3	3	2.71	3
11.1 Inspection of Site	1	1	1	1	1	1	1	1.00	1
12.1 Sufficiency of Tender	2	3	3	1	3	3	3	2.57	3
12.2 Not Forseeable Physical Obstructions or Conditions	1	1	1	1	1	1	1	1.00	1
13.1 Work to be in Accordance with Contract	1	1	1	1	1	1	1	1.00	1
14.1 Programme to be Submitted	2	3	3	2	2	3	3	2.57	3
14.2 Revised Programme	1	1	2	1	1	1	2	1.29	1
14.3 Cash Flow Estimate to be Submitted	2	2	3	2	3	3	3	2.57	3
14.4 Contractor not Relieved of Duties or Responsibilities	1	1	1	1	1	1	1	1.00	1
15.1 Contractor's Superintendence	1	1	1	1	1	1	1	1.00	1
16.1 Contractor's Employees	1	1	1	1	1	1	1	1.00	1
16.2 Engineer at Liberty to Object	1	1	1	1	1	1	1	1.00	1
17.1 Setting-out	1	1	1	1	1	1	2	1.14	1
18.1 Boreholes and Exploratory Excavation	1	1	1	1	1	1	1	1.00	1
19.1 Safety, Security and Protection of the Environment	1	1	1	1	1	1	1	1.00	1
19.2 Employer's Responsibilities	1	1	1	1	1	1	1	1.00	1
20.1 Care of Works	1	1	1	1	1	1	1	1.00	1
20.2 Responsibility to Rectify Loss or Damage	1	2	1	2	1	1	1	1.29	1
20.3 Loss or Damage due to Employer's Risks	1	1	1	1	1	1	1	1.00	1

	Sources								
	Organization 1	Organization 2	Organization 3	Organization 4	Organization 5	Organization 6	Organization 7	Average MRI	Majority MRI
20.4 Employer's Risks	1	1	1	1	1	1	1	1.00	1
21.1 Insurance of Works and Contractor's Equipment	1	2	2	2	2	2	2	1.86	2
21.2 Scope of Cover	2	1	2	2	2	1	1	1.57	2
21.3 Responsibility for Amounts not Recovered	1	1	1	1	1	1	1	1.00	1
21.4 Exclusions	1	1	1	1	1	1	1	1.00	1
22.1 Damage to Persons and Property	1	1	1	1	1	1	1	1.00	1
22.2 Exceptions	1	1	1	1	1	1	1	1.00	1
22.3 Indemnity by Employer	1	1	1	1	1	1	1	1.00	1
23.1 Third Party Insurance (including Employer's Property)	1	1	1	1	1	1	1	1.00	1
23.2 Minimum Amount of Insurance	1	1	1	1	1	1	1	1.00	1
23.3 Cross Liabilities	1	1	1	1	1	1	1	1.00	1
24.1 Accident or injury to Workmen	1	1	1	1	1	1	1	1.00	1
24.2 Insurance Against Accident to Workmen	1	1	1	1	1	1	1	1.00	1
25.1 Evidence and Terms of Insurances	1	1	1	1	1	1	1	1.00	1
25.2 Adequacy of Insurances	1	1	1	1	1	1	1	1.00	1
25.3 Remedy on Contractor's Failure to Insure	1	1	1	1	1	1	1	1.00	1
25.4 Compliance with Policy Conditions	1	1	1	1	1	1	1	1.00	1
26.1 Compliance with Statutes, Regulations	1	1	1	1	1	1	1	1.00	1
27.1 Fossils	1	1	1	1	1	1	1	1.00	1
28.1 Patent Rights	1	1	1	1	1	1	1	1.00	1
28.2 Royalties	1	1	1	1	1	1	1	1.00	1
29.1 Interference with Traffic and Adjoining Properties	1	1	1	1	1	1	1	1.00	1
30.1 Avoidance of Damage to Roads	1	1	1	1	1	1	1	1.00	1
30.2 Transport of Contractor's Equipment or Temporary Works	1	1	1	1	1	1	1	1.00	1
30.3 Transport of Materials or Plant	1	1	1	1	1	1	1	1.00	1
30.4 Waterborne Traffic	1	1	1	1	1	1	1	1.00	1
31.1 Opportunities for Other Contractors	1	1	1	1	1	1	1	1.00	1

	Sources								
	Organization 1	Organization 2	Organization 3	Organization 4	Organization 5	Organization 6	Organization 7	Average MRI	Majority MRI
31.2 Facilities for Other Contractors	1	1	1	1	1	1	1	1.00	1
32.1 Contractor to Keep Site Clear	1	1	1	1	1	1	1	1.00	1
33.1 Clearance of Site on Completion	1	1	1	1	1	1	1	1.00	1
Labour									
34.1 Engagement of Staff and Labour	2	1	1	2	2	1	2	1.57	2
35.1 Returns of Labour and Contractor's Equipment	1	1	1	1	1	1	1	1.00	1
Materials, Plant and Workmanship									
36.1 Quality of Materials, Plant and Workmanship	1	1	1	1	1	1	1	1.00	1
36.2 Cost of Samples	1	1	1	1	1	1	1	1.00	1
36.3 Cost of Tests	1	1	1	1	1	1	1	1.00	1
36.4 Cost of Tests not Provided for	1	1	1	1	1	1	1	1.00	1
36.5 Engineer's Determination where Tests not Provided for	1	1	1	1	1	1	1	1.00	1
37.1 Inspection of Operations	1	1	1	1	1	1	1	1.00	1
37.2 Inspection and Testing	1	1	1	1	1	1	1	1.00	1
37.3 Dates for Inspection and Testing	1	1	1	1	1	1	1	1.00	1
37.4 Rejection	1	1	1	1	1	1	1	1.00	1
37.5 Independent Inspection	1	1	1	1	1	1	1	1.00	1
38.1 Examination of Work before Covering up	2	2	1	2	2	1	1	1.57	2
38.2 Uncovering and Making Openings	1	1	1	1	1	1	1	1.00	1
39.1 Removal of Improper Work, Materials or Plant	1	1	1	1	1	1	1	1.00	1
39.2 Default of Contractor in Compliance	1	1	1	1	1	1	1	1.00	1
Suspension									
40.1 Suspension of Work	1	1	1	1	1	1	1	1.00	1
40.2 Engineer's Determination following Suspension	1	1	1	1	1	1	1	1.00	1
40.3 Suspension lasting more than 84 Days	1	1	1	1	1	1	1	1.00	1
Commencement and Delays									
41.1 Commencement of Works	1	1	1	1	1	1	1	1.00	1
42.1 Possession of Site and Access Thereto	1	1	1	1	1	1	1	1.00	1

	Sources								
	Organization 1	Organization 2	Organization 3	Organization 4	Organization 5	Organization 6	Organization 7	Average MRI	Majority MRI
42.2 Failure to Give Possession	1	1	1	1	1	1	1	1.00	1
42.3 Right of Way and Facilities	1	1	1	1	1	1	1	1.00	1
43.1 Time for Completion	1	2	2	2	2	1	2	1.71	2
44.1 Extension of Time for Completion	1	2	2	2	2	2	1	1.71	2
44.2 Contractor to Provide Notification and Detailed Particulars	1	1	2	2	1	1	1	1.29	1
44.3 Interim Determination of Extension	1	1	1	1	1	1	1	1.00	1
45.1 Restriction on Working Hours	1	1	1	1	1	1	1	1.00	1
46.1 Rate of Progress	1	1	1	1	1	1	1	1.00	1
47.1 Liquidated Damages for Delay	1	3	2	3	3	3	3	2.57	3
47.2 Reduction of Liquidated Damages	1	3	2	3	3	3	3	2.57	3
48.1 Taking-Over Certificate	1	1	1	1	1	1	1	1.00	1
48.2 Taking Over of Sections or Parts	1	1	1	1	1	1	1	1.00	1
48.3 Substantial Completion of Parts	1	1	1	1	1	1	1	1.00	1
48.4 Surfaces Requiring Reinstatement	1	1	1	1	1	1	1	1.00	1
Defects Liability									
49.1 Defects Liability Period	1	1	1	1	1	1	1	1.00	1
49.2 Completion of Outstanding Work and Remedying Defects	1	1	1	1	1	1	1	1.00	1
49.3 Cost of Remedying Defects	1	1	1	1	1	1	1	1.00	1
49.4 Contractor's Failure to Carry Out Instructions	1	1	1	1	1	1	1	1.00	1
50.1 Contractor to Search	1	1	1	1	1	1	1	1.00	1
Alterations, Additions and Omissions									
51.1 Variations	1	1	1	1	1	1	1	1.00	1
51.2 Instructions for Variations	2	3	3	1	3	3	3	2.57	3
52.1 Valuation of Variations	1	2	1	2	2	1	1	1.43	1
52.2 Power of Engineer to Fix Rates	1	1	1	1	1	1	1	1.00	1
52.3 Variations Exceeding 15 per cent	3	2	3	3	3	3	2	2.71	3
52.4 Daywork	1	1	1	1	1	1	1	1.00	1
Procedure for Claims									
53.1 Notice of Claims	1	1	1	1	1	1	1	1.00	1

	Sources								
	Organization 1	Organization 2	Organization 3	Organization 4	Organization 5	Organization 6	Organization 7	Average MRI	Majority MRI
53.2 Contemporary Records	1	1	1	1	1	1	1	1.00	1
53.3 Substantiation of Claims	1	1	1	2	2	1	1	1.29	1
53.4 Failure to Comply	1	1	1	1	1	1	1	1.00	1
53.5 Payment of Claims	1	1	1	1	1	1	1	1.00	1
Contractor's Equipment, Temporary Works and Materials									
54.1 Contractor's Equipment, Temporary Works & Materials ; Exclusive Use for the Works	1	1	1	1	1	1	1	1.00	1
54.2 Employer not Liable for Damage	1	1	1	1	1	1	1	1.00	1
54.3 Customs Clearance	1	1	1	1	1	1	1	1.00	1
54.4 Re-export of Contractor's Equipment	1	1	1	1	1	1	1	1.00	1
54.5 Conditions of Hire of Contractor's Equipment	1	1	1	1	1	1	1	1.00	1
54.6 Costs for the Purpose of Clause 63	1	1	1	1	1	1	1	1.00	1
54.7 Incorporation of Clause in Subcontracts	1	1	1	1	1	1	1	1.00	1
54.8 Approval of Materials not Implied	1	1	1	1	1	1	1	1.00	1
Measurement									
55.1 Quantities	3	2	3	2	3	3	2	2.57	3
56.1 Works to be measured	1	2	2	2	2	1	2	1.71	2
57.1 Method of Measurement	2	2	2	3	3	3	3	2.57	3
57.2 Breakdown of Lump Sum Items	1	1	1	1	1	1	1	1.00	1
Provisional Sums									
58.1 Definition of "Provisional Sum"	1	1	1	1	1	1	1	1.00	1
58.2 Use of Provisional Sums	1	1	1	1	1	1	1	1.00	1
58.3 Production of Vouchers	1	1	1	1	1	1	1	1.00	1
Nominated Subcontractors									
59.1 Definition of "Nominated Subcontractors"	1	1	1	1	1	1	1	1.00	1
59.2 Nominated Subcontractors; Objection to Nomination	1	1	1	1	1	1	1	1.00	1
59.3 Design Requirements to be Expressly Stated	1	1	1	1	1	1	1	1.00	1
59.4 Payments to Nominated Subcontractors	1	1	1	1	1	1	1	1.00	1

	Sources								
	Organization 1	Organization 2	Organization 3	Organization 4	Organization 5	Organization 6	Organization 7	Average MRI	Majority MRI
59.5 Certification of Payments to Nominated Subcontractors	1	1	1	1	1	1	1	1.00	1
Certificates and Payment									
60.1 Monthly Statements	1	1	1	1	1	1	1	1.00	1
60.2 Monthly Payments	1	1	1	1	1	1	1	1.00	1
60.3 Payment of Retention Money	1	1	1	1	1	1	1	1.00	1
60.4 Correction of Certificates	2	1	2	2	2	2	2	1.86	2
60.5 Statement at Completion	2	1	2	3	2	3	3	2.29	2
60.6 Final Statement	2	1	2	1	2	2	2	1.71	2
60.7 Discharge	2	2	3	2	2	1	2	2.00	2
60.8 Final Payment Certificate	2	2	2	2	2	2	3	2.14	2
60.9 Cessation of Employer's Liability	2	2	2	2	1	2	2	1.86	2
60.10 Time for Payment	2	2	2	1	2	2	2	1.86	2
61.1 Approval only by Defects Liability Certificate	1	1	1	1	1	1	1	1.00	1
62.1 Defects Liability Certificate	1	1	1	1	1	1	1	1.00	1
62.2 Unfulfilled Obligations	1	1	1	1	1	1	1	1.00	1
Remedies									
63.1 Default of Contractor	1	1	1	1	1	1	1	1.00	1
63.2 Valuation at Date of Termination	1	1	1	1	1	1	1	1.00	1
63.3 Payment after Termination	1	1	1	1	1	1	1	1.00	1
63.4 Assignment of Benefit of Agreement	1	1	1	1	1	1	1	1.00	1
64.1 Urgent Remedial Work	1	1	1	1	1	1	1	1.00	1
Special Risks									
65.1 No Liability for Special Risks	1	1	1	1	1	1	1	1.00	1
65.2 Special Risks	1	1	1	1	1	1	1	1.00	1
65.3 Damage to Works by Special Risks	1	1	1	1	1	1	1	1.00	1
65.4 Projectile, Missile	1	1	1	1	1	1	1	1.00	1
65.5 Increased Costs arising from Special Risks	1	1	1	1	1	1	1	1.00	1
65.6 Outbreak of War	1	1	1	1	1	1	1	1.00	1
65.7 Removal of Contractor's Equipment on Termination	1	1	1	1	1	1	1	1.00	1
65.8 Payment if Contract Terminated	1	1	1	1	1	1	1	1.00	1

	Sources								
	Organization 1	Organization 2	Organization 3	Organization 4	Organization 5	Organization 6	Organization 7	Average MRI	Majority MRI
Release from Performance									
66.1 Payment in Event of Release from Performance	1	1	1	1	1	1	1	1.00	1
Settlement of Disputes									
67.1 Engineer's Decision	2	3	2	3	3	2	3	2.57	3
67.2 Amicable Settlement	2	3	3	3	2	2	3	2.57	3
67.3 Arbitration	3	3	2	3	3	2	3	3.00	3
67.4 Failure to Comply with Engineer's Decision	3	3	3	3	3	3	3	3.00	3
Notices									
68.1 Notice to Contractor	1	1	2	1	1	1	1	1.14	1
68.2 Notice to Employer and Engineer	1	1	1	1	1	2	1	1.14	1
68.3 Change of Address	1	1	1	1	1	1	1	1.00	1
Default of Employer									
69.1 Default of Employer	3	3	3	3	3	3	3	3.00	3
69.2 Removal of Contractor's Equipment	1	1	1	1	1	1	1	1.00	1
69.3 Payment on Termination	1	1	1	1	1	1	1	1.00	1
69.4 Contractor's Entitlement to Suspend Work	1	1	1	1	1	1	1	1.00	1
69.5 Resumption of Work	1	1	1	1	1	1	1	1.00	1
Changes in Cost and Legislation									
70.1 Increase or Decrease of Cost	3	3	3	3	3	3	3	3.00	3
70.2 Subsequent Legislation	3	3	3	3	3	3	3	3.00	3
Currency and Rates of Exchange									
71.1 Currency Restrictions	3	3	3	3	3	3	3	3.00	3
72.1 Rates of Exchange	3	3	3	3	3	3	3	3.00	3
72.2 Currency Proportions	3	3	3	3	3	3	3	3.00	3
72.3 Currencies of Payment for Provisional Sums	3	3	3	3	3	3	3	3.00	3

It is of note that Figure 11 below considers only the modifications of the original clauses found in the Standard Contractual Form, shown in Table 7, and does not include any consideration of the additional clauses introduced.

The following Figure 11 presents a summary of the findings in relation the extent of modifications.

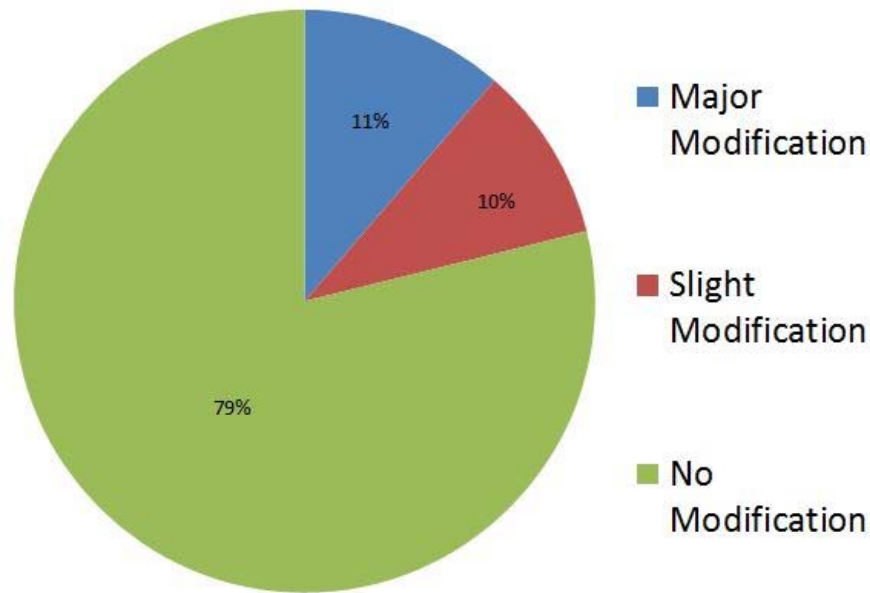


Figure 11: Extent of Contractual Clauses Modifications

4.5.2. Non-Modified Clauses (Majority MRI=1)

As previously discussed, the non-modified clauses are those clauses that are not subject to any modification i.e. whose average MRI was rounded and found equal to 1. Appendix E reflects each sub-clause MRI distribution histogram.

Figure 11 above showed that the majority of the sub-clauses (~78%) are not subject to any modification.

On closer look at these sub-clauses, it could be noted that the majority of the said sub-clauses relate to the administrative aspect of the contract, (definitions and interpretation, notices, Contract Documents, Removal of Contractor's Equipment etc.) and do not relate directly to project financials nor time consideration.

4.5.3. Slightly Modified Clauses (Majority MRI=2)

As previously discussed, the slightly modified clauses are those clauses whose majority MRI was rounded and found equal to 2. The following table, Table 10, indicates the slightly modified sub-clauses.

Table 10: Slightly Modified Sub-Clauses (MRI=2)

PART I - GENERAL CONDITIONS of CONTRACT	Majority MRI
Definitions and Interpretation	
1.1 Definitions	2
Engineer and Engineer's Representative	
2.1 Engineer's Duties and Authority	2
Assignment and Subcontracting	
Contract Documents	
5.2 Priority of Contract Documents	2
General Obligations	
9.1 Contract Agreement	2
10.1 Performance Security	2
21.1 Insurance of Works and Contractor's Equipment	2
21.2 Scope of Cover	2
Labour	
34.1 Engagement of Staff and Labour	2
Materials, Plant and Workmanship	
38.1 Examination of Work before Covering up	2
Suspension	
Commencement and Delays	
43.1 Time for Completion	2
44.1 Extension of Time for Completion	2
Defects Liability	
Alterations, Additions and Omissions	
Procedure for Claims	
Contractor's Equipment, Temporary Works and Materials	
Measurement	
56.1 Works to be measured	2
Provisional Sums	
Nominated Subcontractors	
Certificates and Payment	
60.4 Correction of Certificates	2
60.5 Statement at Completion	2
60.6 Final Statement	2
60.7 Discharge	2
60.8 Final Payment Certificate	2
60.9 Cessation of Employer's Liability	2
60.10 Time for Payment	2

In order to explain further the ranking process adopted in achieving a majority MRI of 2, the following three examples were considered for illustration:

Example 1: Standard Sub-Clause 9.1: Contract Agreement

The Contractor shall, if called upon so to do, enter into and execute the Contract Agreement, to be prepared and completed at the cost of the Employer, in the form annexed to these Conditions with such modification as may be necessary.

Modifications

Add the following at the end of Sub-Clause 9.1: The Contractor will be responsible for payment of Stamp Duties and similar charges (if any) relating to this contract and shall have included all costs in connection within his unit rates.

Example 2: Standard Sub-Clause 10.1: Performance Security

If the Contract requires the Contractor to obtain security for his proper performance of the Contract, he shall obtain and provide to the Employer such security within 28 days after the receipt of the Letter of Acceptance, in the sum stated in the Appendix to Tender. When providing such security to the Employer, the Contractor shall notify the Engineer of so doing. Such security shall be in the form annexed to these Conditions or in such other as may be agreed between the Employer and the Contractor. The institution providing such security shall be subject to the approval of the Employer. The cost of complying with the requirements of this Clause shall be borne by the Contractor, unless the Contract otherwise provides.

Modifications

Add the following at the end of Sub-Clause 10.1: The Contractor shall provide security for proper performance of the Contract to the Employer within 10 days after the receipt of the Letter of Acceptance. The Performance security shall be in the form of bank guarantee. The amount of the bank guarantee shall be 10 percent of the Contract price and shall be issued by a local bank approved by the Employer.

Example 3: Standard Sub-Clause 60.10: Time for Payment

The amount due to the Contractor under any interim certificate issued by the Engineer pursuant to this Clause, or to any other term of the Contract, shall, subject to Clause 47, be paid by the Employer to the Contractor within 28 days after such interim certificate has been delivered to the Employer, or, in the case of the Final Certificate referred to in Sub-Clause 60.8, within 56 days, after such Final Certificate has been delivered to the Employer. In the event of the failure of the Employer to make payment within the times stated, the Employer shall pay to the Contractor interest at the rate stated in the Appendix to Tender upon all sums unpaid from the date by which the same should have been paid. The provisions of this Sub-Clause are without prejudice to the Contractor's entitlement under Clause 69.

Modifications

Add the following at the end of Sub-Clause 60.10: The amount due to the Contractor under any interim payment Certificate issued by the Engineer pursuant to this Clause, or to any other term of the Contract, shall, subject to Clause 47, be paid by the Employer to the Contractor within 14 days after the Contractor's monthly statement has been submitted to the Engineer for certification or, in the case of the Final Certificate pursuant to Sub-Clause 60.8, within 30 days after the agreed Final Statement and written discharge have been submitted to the Engineer for certification. In the event of the failure of the Employer to make payment within the times stated, the Employer shall pay to the Contractor interest compounded monthly at the rate(s) stated in the Appendix to Tender upon all sums unpaid from the date upon which the same should have been paid.

The above three examples show that the modifications are being introduced to complement the Standard sub-clause and provide durations and particulars to execute what is needed. The modifications introduced did not affect the intention of the said Standard sub-clause but provided further details to the same.

4.5.4. Majorly Modified Clauses (Majority MRI=3)

As previously discussed, the majorly modified clauses are those clauses whose majority MRI was rounded and found equal to 3. The following table, Table 11, indicates the majorly modified Sub-Clauses.

Table 11: Majorly Modified Clauses (MRI=3)

PART I - GENERAL CONDITIONS of CONTRACT	Majority MRI
Definitions and Interpretation	
Engineer and Engineer's Representative	
Assignment and Subcontracting	
Contract Documents	
General Obligations	
8.1 Contractor's General Responsibilities	3
10.3 Claims under Performance Security	3
12.1 Sufficiency of Tender	3
14.1 Programme to be Submitted	3
14.3 Cash Flow Estimate to be Submitted	3
Labour	
Materials, Plant and Workmanship	
Suspension	
Commencement and Delays	
47.1 Liquidated Damages for Delay	3
47.2 Reduction of Liquidated Damages	3
Defects Liability	
Alterations, Additions and Omissions	
51.2 Instructions for Variations	3
52.3 Variations Exceeding 15 per cent	3
Procedure for Claims	
Contractor's Equipment, Temporary Works and Materials	
Measurement	
55.1 Quantities	3
57.1 Method of measurement	3
Provisional Sums	
Nominated Subcontractors	
Certificates and Payment	
Remedies	

PART I - GENERAL CONDITIONS of CONTRACT	Majority MRI
Special Risks	
Release from Performance	
Settlement of Disputes	
67.1 Engineer's Decision	3
67.2 Amicable Settlement	3
67.3 Arbitration	3
67.4 Failure to Comply with Engineer's Decision	3
Notices	
Default of Employer	
69.1 Default of Employer	3
Changes in Cost and Legislation	
70.1 Increase or Decrease of Cost	3
70.2 Subsequent Legislation	3
Currency and Rates of Exchange	
71.1 Currency Restrictions	3
72.1 Rates of Exchange	3
72.2 Currency Proportions	3
72.3 Currencies of Payment for Provisional Sums	3

The major modifications were associated with the clauses addressing the Contractor's General Responsibilities, Claims Under Performance Security, Sufficiency of Tender, Programme to be Submitted, Cash Flow Estimate to be Submitted, Liquidated Damages for Delay, Variations, Measurement, Settlement of Disputes, Default of Employer, Cost and rate of Exchange. Appendix G shows the form used for Questionnaires Survey.

In order to explain further the ranking process adopted in achieving a majority MRI of 3, the following three examples for illustration were considered. The full data representation and analysis are found in the upcoming chapters.

Example 1: Standard Sub-Clause 8.1: Contractor's General Responsibility

The Contractor shall, with due care and diligence, design (to the extent provided for by the Contract), execute and complete the Works and remedy any defects therein in accordance with the provisions of the Contract. The Contractor shall provide all superintendence, labour, materials, Plant, Contractor's Equipment and all other things, whether of a temporary or permanent nature, required in and for such design, execution, completion and remedying of any defects, so far as the necessity for providing the same is specified in or is reasonably to be inferred from the contract.

The Contractor shall give prompt notice to the Engineer, with a copy to the Employer, of any error, omission, fault or other defect in the design of or Specification for the Works which he discovers when reviewing the Contract or executing the Works.

Modifications

Add the following sentence at the end of Sub-Clause 8.1:

The Contractor shall also be responsible for all and any design error, omission, and fault.

Example 2: Standard Sub-Clause 52.3 Variations Exceeding 15 per cent

If, on the issue of the Taking-Over Certificate for the whole of the Works, it is found that as a result of:

(a) all varied work valued under Sub-Clauses 52.1 and 52.2, and

(b) all adjustments upon measurement of the estimated quantities set out in the Bill of Quantities, excluding Provisional Sums, day works and adjustments of price made under Clause 70,

but not from any other cause, there have been additions to or deductions from the Contract Price which taken together are in excess of 15 per cent of the "Effective Contract Price" (which for the purposes of this Sub-Clause shall mean the Contract Price, excluding Provisional Sums and allowance for day works, if any) then and in such event (subject to any action already taken under any other Sub-Clause of this Clause), after due consultation by the Engineer with the Employer and the Contractor, there shall be added to or deducted from the Contract Price such further sum as may be agreed between the Contractor and the Engineer or, failing agreement, determined by the Engineer having regard to the Contractor's Site and general overhead costs of the Contract. The Engineer shall notify the Contractor of any determination made under this Sub-Clause, with a copy to the Employer. Such sum shall be based only on the amount by which such additions or deductions shall be in excess of 15 per cent of the Effective Contract Price.

Modifications

Delete sub-Clause 52.3

Example 3: Standard Sub-Clause 69.1: Default of Employer

In the event of the Employer:

(a) failing to pay to the Contractor the amount due under any certificate of the Engineer within 28 days after the expiry of the time stated in Sub-Clause 60.10 within which payment is to be made, subject to any deduction that the Employer is entitled to make under the Contract, or

(b) interfering with or obstructing or refusing any required approval to the issue of any such certificate, or

(c) becoming bankrupt or, being a company, going into liquidation, other than for the purpose of a scheme of reconstruction or amalgamation, or

(d) giving notice to the Contractor that for unforeseen reasons, due to economic dislocation, it is impossible for him to continue to meet his contractual obligations the Contractor shall be entitled to terminate his employment under the Contract by giving notice to the Employer, with a copy to the Engineer. Such termination shall take effect 14 days after the giving of the notice.

Modifications

Delete sub-Clause 69.1

The above three examples show that the modifications are endangering the overall responsibility structure and eliminate some important mechanisms that are already built-in the standard contractual form. The same was further addressed in the upcoming chapter.

The major modifications were found to also govern sub-clauses: 10.3 Claims under Performance Security, 14.1 Programme to be Submitted, 14.3 Cash Flow Estimate to be Submitted, 47.1 Liquidated Damages for Delay, 47.2 Reduction of Liquidated Damages, 51.2 Instructions for Variations, 52.3 Variations Exceeding 15 per cent, 55.1 Quantities, 57.1 Method of Measurement, 67.1 Engineer's Decision, 67.2 Amicable Settlement, 67.3 Arbitration, 67.4 Failure to Comply with Engineer's Decision, 69.1 Default of Employer 70.1 Increase or Decrease of Cost, 70.2 Subsequent Legislation, 71.1 Currency Restrictions 72.1 Rates of Exchange, 72.2 Currency Proportions and 72.3 Currencies of Payment for Provisional Sums.

4.5.5. Additional Introduced Clauses and Sub-Clauses

As a consequent result from the above analysis, the introduction of several additional Clauses and sub-Clauses was also noted. The same was also ranked into MRI which in turn was verified by the two experts. Despite the fact that the said modification did address aspects that were not originally covered or fully covered within the Standard Contract Form, the same did not constitute any major change to the responsibilities, roles, risks originally allocated within the original form. Indeed, this type of modification was found to be considered as a written confirmation of what is normally understood; with some additional particulars that can benefit in a practical way throughout the project execution. Some additions address issues related to the specification part of the construction contract and also fall under the project best practice, other proposed additions are already recommended through some of the publication in relation to the general conditions of contract. Accordingly, the MRI in relation to the same can be considered MRI=2.

Table 12 indicates that the governing Majority MRI for the given additional introduced Clauses and Sub-Clauses is MRI = 2. Further details concerning the added Clauses and Sub-Clauses can be found in Appendix H.

Based on the above, the additional introduced Clauses and Sub-Clauses with an MRI=2 were not be considered for further analysis within the content of this research.

Table 12- Additional Introduced Clauses and Sub-Clauses Ranking Details

	Sources							
	Organization 1	Organization 2	Organization 3	Organization 4	Organization 5	Organization 6	Organization 7	Majority MRI
Additionally Introduced Clauses and Sub-Clauses								
11.2 Access to Data	2	2	2	2	2	2	2	2
25.5 Source of Insurance	2	2	2	2	2	3	2	2
34.2 Employment of Persons in the Services of others	2	2	2	3	2	2	2	2
34.3 Repatriation of Labour	2	2	2	2	2	2	2	2
34.4 Accident Prevention Officer; Accidents	2	2	2	2	2	2	2	2
34.5 Health and Safety	2	2	2	2	2	2	2	2
34.6 Measure against Insect and Pest Nuisance	2	2	2	2	2	2	2	2
34.7 Epidemics	2	2	2	2	2	2	2	2
34.9 Supply of Water	2	2	2	2	2	2	2	2
34.10 Alcoholic Liquor or Drugs	2	2	2	2	2	2	3	2
34.11 Arms and Ammunition	2	2	2	2	2	2	2	2
34.12 Festival and Religious Customs	2	2	2	2	2	2	2	2
34.13 Disorderly Conduct	2	2	2	2	2	2	2	2
35.3 Reporting of Accidents	2	2	2	2	2	2	2	2
60.11 Advance Payment	2	2	2	2	2	2	2	2
62.3 Ten Years Liability	2	2	2	2	2	2	2	2
73.1 Foreign Taxation	2	2	2	2	2	2	2	2
73.2 Local Taxation	2	2	2	2	3	2	2	2
73.3 Income Taxes on Staff	2	2	2	2	2	2	2	2
74.1 Bribes	2	2	2	2	2	2	2	2
76.1: Restrictions on Eligibility	2	2	2	2	2	2	2	2
77.1: Details to be confidential	2	2	2	2	2	2	2	2
78.0 Manufacturers and Suppliers	2	3	2	2	2	2	2	2
79.0 Coordination of the Works	2	2	2	2	2	2	3	2
80.0 Right of Way and Facilities	2	2	2	2	2	2	2	2
81.0 Electricity, Water and Gas	2	2	2	2	2	2	2	2
82.0 Joint and Several Liability	3	2	2	2	2	2	2	2
83.0 Responsibilities for Nominated Subs	2	2	2	3	2	2	2	2
84.0 Taxation	2	2	2	2	3	2	2	2
85.0 Declaration against Waiver	2	2	2	2	2	2	2	2
87.0 Ownership of Goods and materials	2	2	2	2	2	2	2	2
88.0 Maintenance of Clear Title	2	2	3	2	2	2	2	2
89.0 Local Taxes and Duties	2	2	2	2	2	2	2	2

90.0 Income Tax on Staff	2	2	2	3	2	2	2	2
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4.6. Summary

This chapter classified the modifications introduced to sub-clauses into three categories being Non-modified, slightly modified, and largely/ majorly modified with examples of each. The following chapter focuses on the analysis of the identified large modifications.

CHAPTER 5
ANALYSIS OF THE LARGELY
MODIFIED CLAUSES (MRI=3)

CHAPTER 5 - ANALYSIS OF THE LARGELY MODIFIED CLAUSES (MRI=3)

5.1. Introduction

This chapter focuses on the largely modified standard sub-clauses whose MRI = 3 that are introduced to the Conditions of Contract for Works of Civil Engineering Construction (Red Book 4th Edition 1987). The mostly being repeated modification for a specific Sub-Clause is selected using Content Analysis, then put into further analysis.

First each modification is being investigated by understanding the modifications circumstances; this understanding is established through Semi structured interviews, the outcome of which is being shown in order to establish clear understanding about the purpose of the modifications and the corresponding impact and consequences. Second, each modification is benchmarked against the literature and relevant theory. Third, conclusion(s) about the said modification is discussed and withdrawn. The last sections in this chapter are dedicated to recommendations validation.

Concerning the semi structured interviews, all seven participants were addressed and the result of the same is summarized on a per clause basis. As advised in previous chapters, the participants are: the three by far largest Middle Eastern contractors, the two by far most spreading engineering consultancy firms, one of the largest project management consultancy services company, and one of the largest dispute and conflict resolution legal firm in the Middle East as previously discussed in section 3.3.7 of this study.

Concerning the benchmarking part in this Chapter, the modification introduced to a given sub-clause was further compared to major references and publications that addressed this standard form. For instance, the Guide to the Use of FIDIC Conditions of Contract for Works of Civil Engineering Construction fourth edition, which is the guide for the mostly being used standard contractual form as highlighted in Phase III of this research; in addition to The FIDIC forms of Contract Third Edition of Mr. Nael G. Bunni; 2005 and other references. As a result, the being assessed impact of the major modification to this standard condition is presented in a quantitative way as they do relate to project duration and project cost the details of which are presented within the last section of this chapter.

Concerning the Proposed Modification part in this Chapter, it is important to note that each and every modification circumstance was well understood in the related preceding sections; hence and after understanding the objectives and worries of all seven responders

and the related conclusions were drawn accordingly, the proposed modification was selected to alleviate the witnessed concerns in the proper contractual context.

It is of the essence to note that all seven participants were addressed given the same assumption of typical project duration of three years and a project cost 100%. Accordingly, the project duration and cost related impacts were assessed given the said assumption.

5.2. Analysis of Major Modification Number 1:

Standard Sub-Clause 8.1: Contractor's General Responsibility

The Contractor shall, with due care and diligence, design (to the extent provided for by the Contract), execute and complete the Works and remedy any defects therein in accordance with the provisions of the Contract. The Contractor shall provide all superintendence, labour, materials, Plant, Contractor's Equipment and all other things, whether of a temporary or permanent nature, required in and for such design, execution, completion and remedying of any defects, so far as the necessity for providing the same is specified in or is reasonably to be inferred from the contract.

The Contractor shall give prompt notice to the Engineer, with a copy to the Employer, of any error, omission, fault or other defect in the design of or Specification for the Works which he discovers when reviewing the Contract or executing the Works.

Modifications

The modifications being introduced to Sub-Clause 8.1 can be summarized in the following table:

<i>Modification Selection Criteria</i>	Sources							Total Adoption
	Organization 1	Organization 2	Organization 3	Organization 4	Organization 5	Organization 6	Organization 7	
Majority MRI = 3 (previously considered)	3	3	3	3	1	3	3	
<u><i>Modification Description</i></u>	<u><i>Organizations Adoption</i></u>							
Hold the Contractor responsible for the design and any design related issue in addition to the construction works	X	X	X	X		X	X	6
Keep the original wording of this sub-Clause without any modification					X			1

From the above table, six of the seven organizations related modifications converged to the fact that the modification being introduced is to hold the Contractor responsible for the entire project including project design. Accordingly, the modification being put into further analysis considers the same.

Modifications to be analyzed

Add the following sentence at the end of Sub-Clause 8.1:

The Contractor shall also be responsible for all and any design error, omission, and fault.

A. Why the specific modification is being introduced?

The semi structured interviews, with the seven participants, highlighted that the governing reason behind the said modification is to protect the Employer against any design error and any ambiguity in the design that would allow the Contractor for non-budgeted remuneration and non-planned additional time after Contract Award; also to protect the Employer against any potential risk associated with the design and transfer onto the Contractor the liability for any and all deficiencies in the design provided by the Employer. For instance Responder O4 commented that “Protecting the Employer is our duty against any potential issue”

Also, another issue concerning this Sub-Clause is that in the absence of a specific duration that would stress the Contractor to notify the Engineer of any error, omission, fault or other defect in the design of or Specification for the Works, “the Employer has to wait till the end of the project construction, anxiously, in order to guarantee project feasibility” as noted by Responder O6. Accordingly, it is of the essence to discover and notify the Engineer and the Employer about any error, omission, and fault before the execution of the corresponding construction Works which would limit majorly risk associated with project feasibility.

B. What are the implications of such modification?

The feedback received pertaining to this modification was split into two criteria:

1. No implication or negligible implication, this was the feedback received from the two engineering consultancy firms.
2. The five remaining participants noted that since this condition requires the Contractor to review the design in full, such review requires an extensive amount of time and cost which in turn would automatically induce an increase in the Tender price of ~3% and at least 2 months for design review depending on the project nature and regular complexity given three years project duration. In fact, it was also recorded that all five participants confirmed the fact that the being introduced modification is altering the contract Risks by expanding the contractor’s responsibility to cover design works.

The reply received from the two engineering consultancy firms was expected since the said two firms are the two most successful engineering consultancy firms and the processes being adopted in their design guaranty accuracy of their work to the extent that Contractors do not even bother in checking the provided designs. In fact, the said two companies have been in the market for decades and executed thousands of projects all of which were completed successfully. For example O5 mentioned that “we have been in the market for more than 60 years and never faced any design problem”

Other implications were also communicated within the semi-structured interview in specific from Responder O7 are as follows:

- The modification requires the Contractor to review the design in full; the Employer would be thus adding an additional redundant cost that is likely to be already paid by the Employer for the original design.
- The modification adds an additional tier of liability that is likely to cause conflict in case of dispute. “The Employer may find himself torn between two parties (the Consultant who developed the original design and the Contractor who had to verify this design) who may end up refusing such responsibility and try to shift to the other contractually equally bound party” as noted by Responder O7. The liability for design errors is now imposed onto two parties and in two different contracts; the Consultancy contract and the Construction contract.
- The modification would create a risk for dispute between the Contractor and the Engineer. As the Contractor is held responsible for the design it may decide to change such design or specifications to the point of noncompliance with the original design/specification. Such situation may bring the progress to a halt until the Engineer decides whose design is to be followed.
- As the Contractor is responsible for the design it may find ways to cut down on cost by modifying the design to suit such purpose. Such cost reduction may not be acceptable to the Engineer and thus an increased risk for such situation is born.

C. What consequences of the modifications can be drawn?

The modification implies that no matter when the error, omission, fault is found it is the Contractor’s problem. Which means that the Contractor’s responsibility is no longer limited verifying and notifying, the Contractor may need to rectify the design error which mandates design knowledge. Accordingly, one of the most important conclusions that can be drawn from the semi structured interview on this issue is that some Contractors may not have

the technical capabilities that would allow them to be responsible for a design work. They may even not have indulged in any design work which may put the entire project at risk in terms of investment and safety depending on the nature of the error, omission, and fault.

Also, the said modification raises the risk for ‘controlled’ design changes that are imposed by the Contractor to gain benefit from; either in Cost or Time.

D. Any other proposition/ recommendation concerning the modifications being witnessed

As an obvious answer to this question, the participants noted that if the Contractor is to be held responsible for Design, then it is advisable to consider a Design- Built type of Contract in this case Contractors are being qualified for their design capabilities prior invitation to the Tender. Also, considerable time in the project life cycle, depending on the project complexity, is saved since the design review stage that is done by the Contractor before the start of Construction. Also, the Employer would not be paying redundant cost for design.

E. Benchmarking the Sub-Clause Modification

It is worth noting that the second paragraph of Sub-Clause 8.1, which is the paragraph of concern, has been added to the Red Book Fourth Edition in the amendments of 1992. The first paragraph of the clause does not impose a responsibility onto the Contractor for the design that is provided by Employer. The second paragraph imposes a responsibility onto the Contractor for the notification of Employer in case of discovery of errors omission, fault or other defects. However, it does not hold the Contractor responsible for the design that is provided by the Employer.

As per Bunni 2005, the Contractor needs to be requested to give prompt notice to the engineer, “with a copy to the Employer, of any error, omission, fault or other defect in the design of or Specification for the Works which he discovers when reviewing the Contract or executing the Works”. This is the obligation of the Contractor under Sub-Clause 8.1: Contractor’s General Responsibility.

On a different note, The FIDIC 1999 Red Book has removed such design responsibility or detection of error completely. Detection responsibility is limited to the following and is worded in a way that indicates the slight to non-existent obligation of Contractor. These terms give a clear indication of the intent allocated to such topic.

“1.8 Care and Supply of Documents

If a Party becomes aware of an error or defect of a technical nature in a document which was prepared for use in executing the Works. The Party shall promptly give notice to the other Party of such error or defect.

4.7 Setting Out

The Employer shall be responsible for any errors in these specified or notified items of reference but the Contractor shall use reasonable efforts to verify their accuracy before they are used.”

F. Conclusion(s) about the Modification

Since the issue of design responsibly re-allocation turned out to be a non-straight forward approach which would require a different caliber of qualified contractors and would yield escalation in the project cost and time, it is highly recommended to disregard this modification but introduce a time frame for the design review requested which need to be concluded and finalized before the execution works start. The same would relief the Employer from any variation that is related to abortive construction works as a result of design related issues, which is a more expensive type of variation if compared to design variation.

Proposed Modification- Guideline(s) for this sub-Clause

Add the following paragraph at the end of Sub-Clause 8.1:

The Contractor shall check the design upon its receipt within XX days and shall give prompt notice to the Engineer, with a copy to the Employer, of any error, omission, fault or any other defect affecting the construction activities, in the design of or Specifications for the Works which the Contractor discovers when reviewing the Contract documents and other drawings issued by the Engineer and before the execution of the Works.

Accordingly, the Contractor time frame to check and notify for design error, omission and any other fault is now specified hence the Contractor’s verification time is no longer open and the project feasibility can be assessed prior to the start of construction. Also, The Contractor may be requested to issue a Design Certificate as a result of his review highlighting any design problem and limiting the error, omission, fault or any other defect affecting the construction activities to the issues enclosed within the said certificate:

The Contractor is requested to issue following the elapse of the XX days a Design Certificate to the Engineer, with a copy to the Employer, limiting the design error, omission, fault or any other defect affecting the construction activities to the issues enclosed within the said Design Certificate.

The above Design Certificate would guarantee to a certain extent that the Contractor has done his due diligence with respect to design review.

5.3. Analysis of Major Modification Number 2: Standard Sub-Clause 10.3: Claims under Performance Security

Prior to making a claim under the performance security the Employer shall, in every case, notify the Contractor Security stating the nature of the default in respect of which the claim is to be made.

Modifications

The modifications being introduced to Sub-Clause 10.3 can be summarized in the following table:

<i>Modification Selection Criteria</i>	Sources							Total Adoption
	Organization 1	Organization 2	Organization 3	Organization 4	Organization 5	Organization 6	Organization 7	
Majority MRI = 3 (previously considered)	1	3	3	3	3	3	3	
<i><u>Modification Description</u></i>	<i><u>Organizations Adoption</u></i>							
Delete and replace this Sub-Clause by giving liberty to the Employer to claim under security at Employer's convenience		X	X			X	X	4
Delete this Sub-Clause				X	X			2
Keep the original wording of this Sub-Clause without any modification	X							-

From the above table, four of the seven organizations related modifications consider giving full liberty to the Employer in dealing with the performance security provided by the Contractor. Accordingly, the modification being put into further analysis considers the same.

Modifications to be analyzed

Delete the text of sub-Clause 10.3 and substitute with the following:

The Employer can make claim under the performance security at his own discretion without the need to notify the Contractor. Also, The Employer shall have the right to

deduct from this Guarantee, directly and without having to notify the Contractor or take any other measures, the sums due to him from the Contractor.

A. Why the specific modification is being introduced?

The semi structured interview revealed the following reasons concerning the said modification the said modification:

1. All seven organizations noted that the said modification would allow the Employer to liquidate the Performance Security at will without having to notify or resort to the Contractor which would provide the Employer with an upper hand i.e. to utilize such privilege for leverage in negotiating demands or claims by Contractor, to utilize as means of pressuring the Contractor into accepting certain new demands by the Employer such as nominated subcontractor, or higher costlier material specifications...etc. in other words, it is a mean to pressurize the Contractor to always abide by the instructions issued to him keeping in mind that if the Contractor fails to comply with such instructions, the Performance Security can be cashed in full or in part at the Employer's discretion. Responder O2 commented that "the Employer may be in need of some cash at certain circumstances which would be at the Contractor's expense"
2. Six organizations noted that the same is to provide the Employer with additional protection from slow progress or any breaches by the Contractor. Also, the same can be used to threaten the Contractor with such action in case it deems the progress or performance is unsatisfactory. Responder O3 advised that "Employers would always prefer to control as many pressurizing tools as possible".
3. One of the organizations noted that using the said wording, the Performance Bond can be used by the Employer to fund other projects which Employer is having financial difficulties with. Or To provide speedy access to any funding for completing the works or in case the Employer runs into financial difficulties. Case in point may be to utilize the Performance Security as a borrowing source to fund the Project and then repay it to the Contractor in due course.....

B. What are the implications of such modification?

The feedback received regarding the consequences to such modification from all seven participants did categorically converge; all seven noted that the Tender price would be increased by Contractors by the same value that is required for the Performance Security. Therefore, and during the tendering stage, if the Performance Security was advised to be 10%

of the value of the Contract Price, and given the above modifications, the Contractor would be increasing his bid price by 10%.

It was noted throughout discussions, that the said modification is not giving the Contractor the opportunity to be notified about the Employers position regarding a certain issue. Hence, the Contractor shall not be made aware of the Employers priorities and commitments to align his resources to meet the Employer's requirements. The notification that was mandated in the original clause context aimed at drawing the attention of the Contractor to do what needs to be done and rectify what needs to be repaired.

In fact, and if the Contractor was not notified promptly about a certain issue, the Contractor is being denied the opportunity to present his point of view which might be rightful; for instance a claim under the Performance Security may not be attributed to the Contractor himself or even to the project. Hence, the Contractor would then issue an opposing Claim which would later on evolve to a Dispute that will affect directly or indirectly the works progress and communications tones and would certainly damage the trust of Contractor in Employer.

In addition, and if the Contractor failed to account for the same within his tender price, the liquidation of the Performance Security would seriously impacts the Contractor's financial structure and may cause an insolvency that will have a ripple effect onto his subcontractors and suppliers.

From the Employer's end, and in case he liquidates the security, the same would reduce the trust of other bidders in this Employer for future projects.

C. What consequences of the modifications can be drawn?

The modification allowed the Employer to Claim under the Performance Security regardless if the Contractor has defaulted or not. Such "Liberty" is not being granted for free; the Employer is indeed paying for such option. Also, and once the Employer Claims under the Performance Security, the same would lead to additional complications from a contractual perspective which may affect the works progress.

D. Any other proposition/ recommendation concerning the modifications being witnessed

The modification introduced can be considered as an obvious indication/ alert to Contractors that they need to be extremely careful while submitting their bids, and while executing the works. On the other hand, the Employer needs to be aware that despite the fact

the modification introduced would definitely lead to higher tender bids, the benefit from Claiming under the Performance Security if the Contractor did not default is not to his advantage since the Contractor may not be able to sustain the financial consequences of the same which would affect the works progress and eventually the time to completion.

As a result of the semi-structured interview discussions, it was highly recommended to keep this Sub-Clause as per original wording.

E. Benchmarking the Sub-Clause Modification

As per the Guide to the use of this Standard Form, “Normal practice is that when the Contractor is notified of any default, he is given an opportunity to remedy it prior to a claim under the security being made”. Also Bunni 2005, confirmed that the Contractor needs not only to be notified about the claim but needs to be advised about the nature of the breach.

Also, such modification is completely unrecognized in international standard formats of Contracts whereby the liquidation of the security is not attributed to the Contractor’s stance or even to the corresponding project.

F. Conclusion(s) about the Modification

The focus of all project parties needs to be always toward completing the works. If the Employer claims under the Contractor’s Performance Security without prior notification, then Employer is not acting in favor of his project since notifying the Contractor is essential for him to take the needed measures to be back on track. It is of the essence to note that the Employer can always claim under the Performance Security throughout the duration of the project.

Proposed Modification- Guideline(s) for this sub-Clause

No modification is to be introduced to the original wording of this Sub-Clause.

5.4. Analysis of Major Modification Number 3: Standard Sub-Clause 12.1: Sufficiency Tender

The Contractor shall be deemed to have satisfied himself as to the correctness and sufficiency of the Tender and of the rates and prices stated in the Bill of Quantities, all of which shall, except insofar as it is otherwise provided in the Contract, cover all his obligations under the Contract (including those in respect of the supply of goods, materials, Plant or services or of contingencies for which there is a Provisional Sum) and all matters and things necessary for the proper execution and completion of the Works and the remedying of any defects therein.

Modifications

The modifications being introduced to Sub-Clause 12.1 can be summarized in the following table:

<i>Modification Selection Criteria</i>	Sources							Total Adoption
	Organization 1	Organization 2	Organization 3	Organization 4	Organization 5	Organization 6	Organization 7	
Majority MRI = 3 (previously considered)	2	3	3	1	3	3	3	
<u><i>Modification Description</i></u>	<u><i>Organizations Adoption</i></u>							
Delete and replace this Sub-Clause by adding specific project related requirements of the Employer and site related circumstances.			X		X	X	X	4
Delete this Sub-Clause		X						1
Keep the original wording of this Sub-Clause but add specific date(s) time(s) to visit the site	X							-
Keep the original wording of this Sub-Clause without any modification				X				-

From the above table, four of the seven organizations related modifications consider deleting the said Sub-Clause and adding specific project related requirements of the Employer and site related circumstances.

Accordingly, the modification being put into further analysis considers sample of the same.

Modifications to be analyzed

Delete the text of sub-Clause 12.1 and substitute with the following:

The Contractor shall be deemed to have satisfied himself as to the correctness and sufficiency of the Tender and the Contractor shall be deemed to have visited the Site taken account of the prevailing site conditions and of the prevailing political and security situation in the Project country, studied the Contract Documents and, by his own independent observations and inquiry, acquainted himself fully with local conditions, the accessibility of the Site (including Temporary Works Areas) and proper execution of the contract including, but not by way of limitation the following:

- a. Space for the construction of Temporary Works, and for the storage of material, plant and equipment, access and routes to temporary and permanent work areas;
- b. The strict observance of stringent safety regulations and precautions to the satisfaction of the Engineer;
- c. The supply and use of labour, material, plant, equipment and the laws, statutes rules and regulations relevant thereto;
- d. Delays at the port of unloading for customs clearance;
- e. The meaning of every item shown upon the drawings or specified or listed in the Breakdown of the Lump Sum.
- f. All items of Works required under the Contract including those in respect of execution and completion of the Works and remedying of any defects therein even those that relate to design;
- g. The character and levels of sub-soils or strata in or upon which the work is to be carried out, including recorded levels, extremes of weather and all other conditions of whatever nature;
- h. The requirements of all other Contractors working upon or adjacent to the Site including all necessary coordination works;
- i. All other things necessary for the proper construction and completion of the Works and remedying of any defects therein all in accordance with the Programme;
- j. Restriction on disturbance, pollution and noise levels during the construction period, in view of the close proximity of other buildings;
- k. The phasing of infrastructure and restoration of the retained buildings with the related traffic restrictions, fencing, demolition, protection, utility diversions, removal of telephone, water, electricity and drainage services etc...
- l. The laws, regulations, standards and any extra costs or expenses that may result from complying with authorities requirements and applicable rules and codes, provided that this does not involve adjustments to the tender drawings and specifications;
- m. The positions of the Works, temporary Works, Labour camps and storage areas, etc... in relation to other structures and other Contractor's areas, proposed or existing and overhead/underground services and the like;
- n. Provision of any necessary temporary roads for the supply and installation of plant and equipment and any necessary protection and repairs of existing roads, pavements, services, etc... on site;

- o. The restrictions on the use of drainage and sewage infrastructure for the pumping away of waste or ground water from site operations;

The sum named in the tender shall be deemed to allow for all obligations under the contract. Claims against the Employer brought on the grounds of want or lack of knowledge on misunderstanding of any of the foregoing shall not be permitted.

A. Why the specific modification is being introduced?

All seven participants jointly agreed that the said modification adds clarity towards the obligation of the Contractor and that the Employer is resorting to this measure to ensure that the Contractor has thoroughly studied the tender. It was recorded by four of the participants that Contractors tend to skim thru the conditions of the contract and focus mainly or only on the pricing of the Bill of Quantity, for example Responder O3 commented “in a bidding environment, major focus should be on the Bill of Quantity”, which would result in claims filed against the Employer for presumably ‘unforeseen’ situations that were indeed mentioned in the terms of the contract but overlooked in the bidding of the tender. The reason behind this modification is to make sure that the Contractor is well aware of the project details and acknowledges that he had “satisfied himself” with the project circumstances. Accordingly, the said sub-clause would limit the Contractor’s claiming capability in relation to the above mentioned issues and a possible mean for preventing disputes due to bidders’ ‘unawareness’ of these ‘pitfalls’ which normally materialize in the execution of the Works and cost the project both time and money.

Also, the original wording of this sub-clause do not provide a clear description or guide to the Contractor of issues that the latent need to be of relevance which the Contractor might have skipped while presenting his bid.

Item f addresses the design responsibility which was previously analyzed previously in this Chapter, under sub-clause 8.1, and shall not be discussed further in this section.

B. What are the implications of such modification?

The semi structured interview revealed the following implications as a result of the said modification:

1. Since the said modification provides a clear vision to the Contractors of the main issues that need to be considered while studying the project documents, “Check list”, the Contractor is becoming more aware of the project circumstances; hence his tender price would much more reflect his familiarity and capabilities to deal with the project

related issues. Having priced the project properly, claiming is no longer considered essential for Contractor to balance for a certain loss.

2. The introduced modification would in turn further limit the issues that can be considered as claiming material this is due to the use of “satisfied himself” which is part of the original wording of this sub-Clause.
3. The said modification is considered as a sort of screening, further pre-qualification, that would distinguish suitable Contractors for a specific project from others to the extent that some Contractors may decline from bidding due to their limited familiarity with the project circumstances.
4. Being explicitly exposed to project circumstances, Contractors are most likely to request extension of the tendering and bidding period depending on the Contractors familiarity of the project context. Such extension is in the order of ~2 months depending on the project nature and associated complexity as advised by the participants for three years project duration.

Or sometimes, tenders may request an extension of the Time for Completion of the works to cater for proper mobilization and other General Requirements related issues. The period normally requested as an extension is also in the order of ~2 months.

5. All seven participants noted that the said modification should not entail tender price increase since Contractors normally consider certain allowance to cover for the same.

C. What consequences of the modifications can be drawn?

All feedback received from all seven participants were positive. All seven emphasized on the importance of clarity” additional Clarity wouldn’t hurt”. Also, all seven participants noted that the said modifications have no financial impact since the Contractor needs to abide by the said requirements anyway; hence no price change would be entailed as a result of these requirements despite limiting the Contractor’s claiming capability for variations.

With respect to time, all seven participants noted that the project original duration is most likely to be increased unless the Contractor has already overpriced for the project, he may pay additional money to fulfill the requirements which would limit his award chances, or is extremely familiar with the project circumstances. The two (2) months project delay was considered to be a fair average for all seven participants given the 3 years project life.

D. Any other proposition/ recommendation concerning the modifications being witnessed

As highlighted by participants, the main concern of all project parties needs to be “Project Success”. Accordingly, spreading awareness of the project related circumstances, difficulties, would create a better understanding of the project for all project parties. Hence, all seven participants encouraged the introduced modification as a sample of issues that needs to be flashed to the Contractor.

It is of the essence to note that what is being stated as “additional Clarity wouldn’t hurt” need not to conflict with the other parts of the Contract document. In fact, one of the participants noted that the body of the General Conditions of Contract should be left to speak for itself without the need for emphasizing or repeating existing terms. Another risk that such repetition adds is the chance of misinterpretation in respect to which of the two clauses overrules in case certain differences in application are detected. Therefore, if there is a need to consider any project specific issue, the same need to be carefully considered. Hence, and despite that the project may be delayed by ~2 months, such duration would provide better understanding of the project circumstances which would present an added benefit towards all project parties.

E. Benchmarking the Sub-Clause Modification

As per the Guide to the use of this Standard Form, Sub-Clause 12.1 “emphasizes that the tenderer is deemed to have made a thorough investigation of the Site and its surroundings as far as was practicable within the time allowed for the preparation of his tender.” The guide noted two issues: one “as far as practicable” and two “the time allowed for the preparation of his tender”. Both issues are not part of the original wording of this sub-Clause. But, Sub-Clause 12.2 opens the floor for some flexibility in relation to Adverse Physical Obstructions or Conditions and refers the same to the Engineer for assessment which does not conflict with the introduced modification for sub-clause 12.1.

F. Conclusion(s) about the Modification

The feedback received on this modification turned out to be positive with the sole disadvantage of extending the project duration either during tendering and/ or duration execution. Therefore, the witnessed modification is considered as part of the proposed modification after excluding the design responsibility consideration

Proposed Modification- Guideline(s) for this sub-Clause

Delete the text of sub-Clause 12.1 and substitute with the following:

The Contractor shall be deemed to have satisfied himself as to the correctness and sufficiency of the Tender and the Contractor shall be deemed to have visited the Site taken account of the prevailing site conditions and of the prevailing political and security situation in the Project country, studied the Contract Documents and, by his own independent observations and inquiry, acquainted himself fully with local conditions, the accessibility of the Site (including Temporary Works Areas) and proper execution of the contract including, but not by way of limitation the following:

- Space for the construction of Temporary Works, and for the storage of material, plant and equipment, access and routes to temporary and permanent work areas;
- The strict observance of stringent safety regulations and precautions to the satisfaction of the Engineer;
- The supply and use of labour, material, plant, equipment and the laws, statutes rules and regulations relevant thereto;
- Delays at the port of unloading for customs clearance;
- The meaning of every item shown upon the drawings or specified or listed in the Breakdown of the Lump Sum;
- All items of Works required under the Contract
- The character and levels of sub-soils or strata in or upon which the work is to be carried out, including recorded levels, extremes of weather and all other conditions of whatever nature;
- The requirements of all other Contractors working upon or adjacent to the Site including all necessary coordination works;
- All other things necessary for the proper construction and completion of the Works and remedying of any defects therein all in accordance with the Programme;
- Restriction on disturbance, pollution and noise levels during the construction period, in view of the close proximity of other buildings;
- The phasing of infrastructure and restoration of the retained buildings with the related traffic restrictions, fencing, demolition, protection, utility diversions, removal of telephone, water, electricity and drainage services etc...
- The laws, regulations, standards and any extra costs or expenses that may result from complying with authorities requirements and applicable rules and codes, provided that this does not involve adjustments to the tender drawings and specifications;
- The positions of the Works, temporary Works, Labour camps and storage areas, etc... in relation to other structures and other Contractor's areas, proposed or existing and overhead/underground services and the like;
- Provision of any necessary temporary roads for the supply and installation of plant and equipment and any necessary protection and repairs of existing roads, pavements, services, etc... on site;
- The restrictions on the use of drainage and sewage infrastructure for the pumping away of waste or ground water from site operations;

The sum named in the tender shall be deemed to allow for all obligations under the contract. Claims against the Employer brought on the grounds of want or lack of knowledge on misunderstanding of any of the foregoing shall not be permitted.

5.5 Analysis of Modification Number 4:

Standard Sub-Clause 14.1: Programme to be Submitted

The Contractor shall, within the time stated in Part II of these Conditions after the date of the Letter of Acceptance, submit to the Engineer for his consent a programme, in such form and detail as the Engineer shall reasonably prescribe, for the execution of the Works.

The Contractor shall, whenever required by the Engineer, also provide in writing for his information a general description of the arrangements and methods which the Contractor proposes to adopt for the execution of the Works.

Modifications

The modifications being introduced to Sub-Clause 14.1 can be summarized in the following table:

<i>Modification Selection Criteria</i>	Sources							Total Adoption
	Organization 1	Organization 2	Organization 3	Organization 4	Organization 5	Organization 6	Organization 7	
Majority MRI = 3 (previously considered)	2	3	3	2	2	3	3	
<u><i>Modification Description</i></u>	<u><i>Organizations Adoption</i></u>							
Delete and replace this Sub-Clause by including programme related details and a duration to submit the programme		X	X			X	X	4
Include duration to submit the programme	X			X	X			-

From the above table, four of the seven organizations related modifications consider deleting the original sub-clause and include programme related details within given time frame to submit the required programme. Accordingly, the modification being put into further analysis considers the same.

Modifications to be analyzed

Delete the text of sub-Clause 14.1 and substitute with the following:

The Contractor shall within the Standard 7 days from the letter of Acceptance submit to the Engineer for his consent, and as may be advised by the Engineer, a programme to include but not limited to the followings:

- WBS, Activity Coding and Activity ID Codes.
- Critical Path.
- Compliance with Contractual Milestones.
- Overall Sequence of work.
- Relations and lags.
- Activities Calendars.
- Assumed Constraints.
- Resource and Cost Loading on activities and as overall.
- Completeness of scope.
- Total Float and Free Float.
- Activities Durations.
- Adequate duration (and correct relations and lags) allowed for Client, Engineer and Authorities Activities.

A. Why the specific modification is being introduced?

The semi structured interview revealed that one of the most common problems with Contractors is their failure in submitting their programme of the works within the early stages of the construction works. In fact, it was noted by four of the participants that some contractors don't submit the same until the mid of the construction duration. The 7 days is always being introduced to create a certain trend in the industry that Contractors need to get familiar with submitting the programme of the works within the first week of construction contract award. In this way, the progress can be measured and controlled at an early stage of the project life cycle.

Also, all seven participants noted that it is better to have the structure of the construction programme well defined in order to guarantee common understanding while establishing the same between project parties.

B. What are the implications of such modification?

Despite the fact that all seven participants are with the One Week "Trend", six of them noted the difficulty associated with fixing a specific duration to be able to produce the required programme. In fact, the production of the programme was linked to the proper understating of the project and to the effort associated with the execution of the construction works. Therefore, limiting the duration to produce the programme to one week, for all

projects, would yield improper planned programme. Hence, such vital tool for project success has now become deficient leading to delays and associated project cost escalation.

All participants noted that the delay associated with this modification, a week to study the project and produce a detailed programme of the same, is not less than one month with potential increase to years depending on the nature of the project and programme degree of deficiency given a 3 years project. The resulting project cost escalation associated with this delay is in the order of 2% to more than 30% for the same 3 years project.

Concerning the quality of the programme, all seven participants noted the importance of detailing the nature of the requested programme ahead of time which would guarantee common understanding of what is being requested hence eliminate major misunderstandings and conflicts in this essential tool to any project success.

One of the participants noted that the modification omitted essential requirement for the methodology of execution of the Works. For example, Responder O1 noted that “the programme is the backbone of the project timely completion”. As this modification eliminates such requirement, the method of execution of the Works becomes obscure to the Engineer and the Employer and may lead to disputes. The subject methodology goes hand in hand with the development. It is a fundamental prerequisite for the integrity and quality of the Programme. All the major activities of the Programme normally originate from such methodology. Therefore, while this modification is strictly aimed at covering the intricacies of the Programme it has lost visibility of the methodology of the execution of the Works.

C. What consequences of the modifications can be drawn?

All seven participants shared the importance of the programme as being a vital tool for project success; “Project Success Backbone”; since it was noted that the programme is associated with several contractual concepts that are interlinked to the programme and use this media for further analysis. The same is obviously seen within the standard form under investigation. For instance, the programme depicted in sub-clause “14.1 Programme to be Submitted” is interlinked with, but not limited to, the following sub-clauses:

- 14.2 Revised Programme
- 14.3 Cash Flow Estimate to be Submitted
- 40.1 Suspension of Work
- 40.2 Engineer's Determination following Suspension
- 40.3 Suspension lasting more than 84 Days
- 41.1 Commencement of Works

- 42.1 Possession of Site and Access Thereto
- 42.2 Failure to Give Possession
- 43.1 Time for Completion
- 44.1 Extension of Time for Completion
- 44.2 Contractor to Provide Notification and Detailed Particulars
- 44.3 Interim Determination of Extension
- 45.1 Restriction on Working Hours
- 46.1 Rate of Progress
- 47.1 Liquidated Damages for Delay
- 47.2 Reduction of Liquidated Damages

Therefore, the programme is essential for the proper estimate of cash flow, identifying the extent and time implication of any suspension or change that may be introduced to the works sequence. The programme is also important for extension of time analysis and the identifications of responsibilities.... etc. Accordingly, not submitting the proper programme promptly would rescind all dependent contractual mechanisms.

From a different perspective, participants noted that the Time for Completion for some project is not reasonably considered which would make it difficult for Contractors to submit a workable programme that would respect this limitation. Therefore, Contractors would be depending on variation order as a mean to extend the Time for Completion which would mandate an escalation in project cost due to the extended stay on the project.

Also, participants noted the importance to have programme timely updates but the same is not part of the original Clause wording or the being introduced modification hence the same shall not be considered for further discussion.

D. Any other proposition/ recommendation concerning the modifications being witnessed

From the above, there exist three major concerns that need to be addressed; the first is submitting the programme promptly and in a timely manner, the second relates to the quality of the programme to be submitted, and the third relates to the absence of the works methodology.

Concerning programme submittal time, and in order to better control the progress in the production of the same, it is highly recommended to develop the programme in stages in a way to have interim checks and verification which would ascertain that the preparation of the programme is in progress and also would ascertain the quality of the being produced

programme; Noting that the time within which the programme shall be submitted need to be reasonable and reflect the complexity of the project.

Regarding the programme structure, the Construction Specifications Institute (CSI) produced a detailed section being SECTION 013216 – CONSTRUCTION SCHEDULE that presents a general guideline toward the preparation and management of the programme. The said section consists of construction programme requirements, updates, and Time impact analysis.

The purpose of this section introduction is to ensure adequate planning, coordination, scheduling, and reporting during execution of the work by the Contractor. As per CSI, The said section is important since the Construction programme will assist the project parties in monitoring the progress of the work, evaluating proposed changes, and processing the monthly progress payment. Appendix I provides an extract from CSI being SECTION 013216 that deals with Construction schedule.

E. Benchmarking the Sub-Clause Modification

Concerning fixing the duration to 7 days, the Guide to the use of this Standard Form note that “Depending upon the length of the construction period it may be appropriate to plan the immediate period in detail and later periods in general terms and update and refine the programme at regular intervals, for example every three months” accordingly the guide acknowledges the link that exists between the length of construction period and planning for the works; therefore, it goes without saying that the length of construction period need to be reflected in the period granted to the Contractor to submit his programme. The nature and quality of the programme is fully left “in such form and detail as the Engineer shall reasonably prescribe for the execution of the Works”.

Also, the Standard form noted that “Tenderers will normally have been required to submit with their tenders a preliminary programme for the execution of the Works” which a reasonable starting point in fulfilling the programme requirements under 14.1.

F. Conclusion(s) about the Modification

As seen before, the feedback received on this modification in relation to the 7 days is not encouraging also is not in line with the Standard Form. But, all seven participants welcomed the introduced programme description details, procedures, and methods for programme preparation.

Proposed Modification- Guideline(s) for this sub-Clause

Delete the text of sub-Clause 14.1 and substitute with the following:

The Contractor shall submit to the Engineer a programme, showing the order of procedure, and method, in which the Contractor proposes to carry out the Works, in the form of a design, procurement and construction progress bar chart supplemented by a resource schedule together with a written narrative explaining the Contractor's arrangements for carrying out of the Works, including a description of the Contractor's Equipment and Temporary Works which the Contractor intends to supply, use, or construct, as the case may be. The Contractor shall produce a critical path analysis programme, in electronic format using approved computer software, to the satisfaction of the Engineer.

The programme shall be developed in stages as defined hereafter in 14.1.1, 14.1.2, 14.1.3 and 14.1.4.

Contractor to refer to the Specifications, SECTION 013216 – CONSTRUCTION SCHEDULE, for detailed requirements for the submission of programmes, including Preliminary Construction Programme, Contractor's Construction Programme and updates thereof.

14.1.1 Pre-scheduling Conference

The Contractor shall, within seven (7) days of issuing the Notice to Commence, attend a Pre-scheduling Conference with the Engineer to review the methods and procedures related to the Preliminary Construction Programme and Contractor's Construction Programme in accordance with the Contract requirements set out in the Specifications. In addition to the Contract requirements, the Contractor shall discuss sequence of operations plus the cost and resource loading methodology.

14.1.2 Preliminary Construction Programme

Within XXXX (XX) days of issuing the Notice to Commence, the Contractor shall submit to the Engineer the Preliminary Construction Programme for his review. The Engineer and the Contractor shall meet within seven (7) days after the submittal of the Preliminary Construction Programme to review and make any necessary adjustments or revisions.

14.1.3 Contractor's Construction Programme

The Contractor shall submit the Contractor's Construction Programme within XXXX XX (XX) days of receipt of Engineer's comments on the Preliminary Construction Programme. The structure, level of detail, reports, and necessary information of the Contractor's Construction Programme shall be as required for in the Specifications. The Contractor's Construction Programme review process and subsequent updates shall be in accordance with the requirements in the Specifications. Any further resubmission required by the Engineer shall be submitted within fourteen (14) days of receipt of Engineer's comments.

5.6 Analysis of Modification Number 5

Standard Sub-Clause 14.3: Cash Flow Estimate to be Submitted

The Contractor shall, within the time stated in Part II of these Conditions after the date of the Letter of Acceptance, provide to the Engineer for his information a detailed cash flow estimate, in quarterly periods, of all payments to which the Contractor will be entitled under the Contract and the Contractor shall subsequently supply revised cash flow estimates at quarterly intervals, if required to do so by the Engineer.

Modifications

The modifications being introduced to Sub-Clause 14.3 can be summarized in the following table:

<i>Modification Selection Criteria</i>	Sources							Total Adoption
	Organization 1	Organization 2	Organization 3	Organization 4	Organization 5	Organization 6	Organization 7	
Majority MRI = 3 (previously considered)	2	2	3	2	3	3	3	
<i>Modification Description</i>	<i>Organizations Adoption</i>							
Delete and replace this Sub-Clause by giving full authority to the Engineer in relation to the same			X		X		X	3
Delete this Sub-Clause						X		1
Keep the original wording of this Sub-Clause but add specific date(s) time(s) to visit the site	X	X		X				-

From the above table, the deletion and replacement of the wording of this Sub-Clause is the most recurring modification and shall be considered for further analysis.

Modifications to be analyzed

Delete the text of sub-Clause 14.3 and substitute with the following:

The submittal of the cash flow shall be provided to the Engineer in the form as may be advised by the Engineer and upon his request. The Contractor shall supply revised cash flow estimates also upon the Engineer's request. The resulting S

curve shall be updated to reflect the actual progress payments versus the planned progress payments.

A. Why the specific modification is being introduced?

The semi structured interview revealed that the reason behind the said modification introduction is the need to provide the Employer with enough flexibility to be able to align the project payments with the project scheduled financing scheme. The quarterly intervals depicted in the original wording of this sub-clause may not reflect sufficiently the project financial commitments. If the same was not properly handled, the Employer may be unable to fulfill his contractual financial commitments to the Contractor which would create unfavorable situation to any project.

Concerning cash flow updates, the same is essential since the Employer may need to modify/ update his original cash flow by allocating more or less money for a given month hence securing proper project financing and payment progress to the Contractor.

B. What are the implications of such modification?

During the semi structured interview, it was noted that the modification omits the requirement for the date that is set in part II which specifies the date of submittal of the first report. However, such omission should have no implications as it is replaced with a provision that gives the Engineer ample flexibility in setting his own timing and frequency of submittals.

One major advantage was recorded is that it allows the Engineer to control the timing and frequency of the cash flow submittals which is a tool that would assist in planning to ensure the needed financial requirements.

All seven participants noted that the said modification will not affect the project time frame nor the project cost.

C. What consequences of the modifications can be drawn?

Several concerns during the semi structured interview were recorded, but no major unease was recorded in relation to the same. For instance:

- The modification omits the description of a cash flow. For instance, The original clause defines what the cash flow is about “*a detailed cash flow estimate, in quarterly periods, of all payments to which the Contactor will be entitled under the Contract*” whereas the modified wording goes straight to using the term “cash flow” and

assumes that such terminology is known to the Contractor. The lack of definition of the cash flow may cause confusion or difference in interpretation between the parties.

- The term ‘S curve’ is also not defined. While the wording presumes that based on the norms of the industry such term is known to all, the lack of its definition leaves room for misinterpretation and confusion.
- The modification misses to identify the extent of coverage span in time of the cash flow. While the original clause specifically states “*all payments to which the Contractor will be entitled under the Contract*” which would include change orders and covers the whole period of the Works, the modified version does not state any period of coverage which the cash flow is to represent. It basically takes for granted that the “planned progress payments” should mean all payments but the Contractor may not necessarily understand it as such. It may very well be understood that the “planned” covers up to the end of the reporting period rather than the whole duration of the Works.

D. Any other proposition/ recommendation concerning the modifications being witnessed

One important recommendation that was provided by one organization is to modify the clause by amending it rather than replacing it. The modifications presume that the original clause is still part of the Contract, which is not the case, with several “beneficial” terms have been unnecessarily deleted, as explained above.

E. Benchmarking the Sub-Clause Modification

Bunni (2005) noted that “Sub-clause 14.3 now requires the contractor to provide a detailed cash flow estimate, in quarterly periods, of all payments to which the contractor will be entitled under the contract”. Also, the standard guide provides no different understanding from Bunni. Accordingly, the modification being introduced is not a traditional one.

F. Conclusion(s) about the Modification

As advised earlier, rather than deleting the original clause, it is recommended to supplement it with the language added in the modified clause. This way the ‘good’ part is maintained and the added language improves the existing clause by granting flexibility to the Engineer as explained above.

Proposed Modification- Guideline(s) for this sub-Clause

The Contractor shall, within XXXX days of the Letter of Acceptance, provide to the Engineer for his information a detailed cash flow estimate, in the form as may be advised by the Engineer and upon his request, of all payments to which the Contractor will be entitled under the Contract and the Contractor shall subsequently supply revised cash flow estimates when advised by the Engineer, if required to do so by the Engineer. The resulting S curve shall be updated to reflect the actual progress payments versus the planned progress payments.

5.7 Analysis of Modification Number 6

Standard Sub-Clause 47.1 Liquidated Damages for Delay

If the Contractor fails to comply with the Time for Completion in accordance with Clause 48, for the whole of the Works or, if applicable, any Section within the relevant time prescribed by Clause 43, then the Contractor shall pay to the Employer the relevant sum stated in the Appendix to Tender as liquidated damages for such default and not as a penalty (which sum shall be the only monies due from the Contractor for such default) for every day or part of a day which shall elapse between the relevant Time for Completion and the date stated in a Taking-Over Certificate of the whole of the Works or the relevant Section, subject to the applicable limit stated in the Appendix to Tender. The Employer may, without prejudice to any other method of recovery, deduct the amount of such damages from any monies due or to become due to the Contractor. The payment or deduction of such damages shall not relieve the Contractor from his obligation to complete the Works, or from any other of his obligations and liabilities under the Contract.

Modifications

The modifications being introduced to Sub-Clause 47.1 can be summarized in the following table:

<i>Modification Selection Criteria</i>	Sources							Total Adoption
	Organization 1	Organization 2	Organization 3	Organization 4	Organization 5	Organization 6	Organization 7	
Majority MRI = 3 (previously considered)	1	3	2	3	3	3	3	
<u><i>Modification Description</i></u>	<u><i>Organizations Adoption</i></u>							
Delete and replace this Sub-Clause by considering Delay Penalty rather than Liquidated Damages		X		X	X	X	X	5
Keep the original wording of this Sub-Clause but deduct money from upcoming Contractor dues only			X					-
Keep the original wording of this Sub-Clause without any modification	X							-

The above table indicates that considering Delay Penalty rather than Liquidated Damages is the governing major modification to this Sub-Clause. Therefore, the modification being put into further analysis considers sample of the same.

Modifications to be analyzed

Delete the text of sub-Clause 10.3 and substitute with the following:

Delay Penalty:

If the Contractor fails to comply with Time for Completion, the Contractor shall pay delay penalty to the Employer for this default. This penalty shall be the sum stated in the Appendix to Tender, which shall be paid for every day which shall elapse between the relevant Time for Completion and the date stated in the Taking-Over Certificate. However, the total amount due under this Sub-Clause shall not exceed the maximum amount of penalty delay damages stated in the Appendix to Tender.

A. Why the specific modification is being introduced?

The semi structured interview highlighted that the reason behind the introduction of the said modification is to provide the Employer with additional protection by converting the liquidated damages to penalty payment hence escaping the difficulty associated with liquidating the damages that may occur due to Contractor's delay. Responder O4 noted that "Penalty mechanism is easier to implement by the Employer in the event the Contractor failed his obligations"

B. What are the implications of such modification?

As a result of the introduction of this modification, the feedback received from the seven participants in terms of impact can be summarized by considering 4% increase in the project cost and not less than a one month increase in the project original time for completion, given typical project duration of three years, as a direct impact of this modification. Also, it was noted during the semi structured interviews that Contractors normally tend to request increasing the project duration in order to protect themselves against damages or penalty.

C. What consequences of the modifications can be drawn?

As per the feedback received from the semi structured interview, the modification eliminates the procedure as to how the penalty money will be deducted. Therefore, while the original clause is specific about the mechanism allotted for such deduction "*The Employer may, without prejudice to any other method of recovery, deduct the amount of such damages from any monies due or to become due to the Contractor*" the modified version is silent about

this procedure. In so doing, there is a void created that is likely to attract arguments between the parties and lead to misinterpretation by both parties.

Another consequence that was addressed during the said interview is the fact that the modification may lead to difference in interpretation as to what the Contactor may not do in case such money is deducted; and that is, in the original clause wording, the Contractor's obligation is to continue the Works unaffected and the fulfillment of his other obligations.

One of the participants noted that "the term Penalty is not recognized under some Laws".

D. Any other proposition/ recommendation concerning the modifications being witnessed

From the above analysis, the modification would impact the project cost and time also it was recorded that it is erroneous in many aspects. It will likely lead to misinterpretation of this clause by both parties.

E. Benchmarking the Sub-Clause Modification

It was noted by one of the organizations that "the term Penalty is not recognized under some Laws". Accordingly, changing the type of the due payment from "liquidated damage" amount to a penalty one may invalidate the payment (i.e. Contractor would not have to pay it) under certain laws such as the British Law. As an agreement for one party to pay another Penalty is not acceptable under many laws, FIDIC has ensured that such damage would be paid as a liquidated damage. Accordingly, such a change is deemed an error in the Contract that invalidates this part of it.

F. Conclusion(s) about the Modification

The conclusion that can be withdrawn is that it is unnecessary to modify this clause. While the Employer is most likely under the understanding that such modification is fool-proof in terms of specifying exactly what, when and how much is to be deducted, it actually weakens the Employer's position by eliminating many controls that are provided for and embedded in the original clause to safeguard from any misinterpretation; Notwithstanding some Law considerations in relation to Penalty Term.

Proposed Modification- Guideline(s) for this sub-Clause

No modification is to be introduced to the original wording of this Sub-Clause.

5.8 Analysis of Modification Number 7

Standard Sub-Clause 47.2 Reduction of Liquidated Damages

If, before the Time for Completion of the whole of the Works or, if applicable, any Section, a Taking-Over Certificate has been issued for any part of the Works or of a Section, the liquidated damages for delay in completion of the remainder of the Works or of that Section shall, for any period of delay after the date stated in such Taking-Over Certificate, and in the absence of alternative provisions in the Contract, be reduced in the proportion which the value of the part so certified bears to the value of the whole of the Works or Section, as applicable. The provisions of this Sub-Clause shall only apply to the rate of liquidated damages and shall not affect the limit thereof.

Modifications

The modifications being introduced to Sub-Clause 47.2 can be summarized in the following table:

<i>Modification Selection Criteria</i>	Sources							Total Adoption
	Organization 1	Organization 2	Organization 3	Organization 4	Organization 5	Organization 6	Organization 7	
Majority MRI = 3 (previously considered)	1	3	2	3	3	3	3	
<u><i>Modification Description</i></u>	<u><i>Organizations Adoption</i></u>							
Delete and replace this Sub-Clause by considering Delay Penalty rather than Liquidated Damages and considering no effect to the issuance of any TOC		X		X	X	X	X	5
Keep the original wording of this Sub-Clause but include time period for the reduction of the damages			X					-
Keep the original wording of this Sub-Clause without any modification	X							-

The above table indicates that considering no effect to the issuance of the Taking Over Certificate on the reduction of applicable damages is governing major modification to this

Sub-Clause. Therefore, the modification being put into further analysis considers sample of the same.

Note: the analysis in this sub-Clause is limited to the reduction of the possible claimed damages by the Employer since the issue of liquidated damages Vs penalty was considered in the previous analyzed modification.

Modifications to be analyzed

Delete the text of sub-Clause 47.2 and substitute with the following:

If, before the Time for Completion of the whole of the Works or, if applicable, any Section, a Taking-Over Certificate has been issued for any part of the Works or of a Section, the Penalty For Delay in completion of the remainder of the Works or of that Section shall, for any period of delay after the date stated in such Taking-Over certificate, and in the absence of alternative provisions in the Contract, shall not be reduce.

A. Why the specific modification is being introduced?

The semi structured interview highlighted that the reasons behind the introduction of the said modification are:

- To provide the Employer with additional assurance for timely completion of the remainder of the Works. The same is being enforced by maintaining the amount of penalty fixed irrespective of any partial completion and issuance of corresponding TOC.
- To allow the Employer to exert additional pressure on the Contractor to finish the last portion of the Works with equal momentum as the earlier parts. Responder O5 noted that “We want to pressure the Contractor to finish every section independently of all the other sections”

B. What are the implications of such modification?

As a result of the introduction of this modification, the feedback received from the seven participants in terms of impact can be summarized by considering 4% increase in the project cost and not less than a one month increase in the project original time for completion, given typical project duration of three years, as a direct impact of this modification. Also, it was noted during the semi structured interviews that Contractors normally tend to request increasing the project duration in order to protect themselves against damages or penalty.

Also, during the said semi-structured interview several scenarios that would render this clause extremely unfair to the Contractor were put into discussion for instance:

- The case when a large portion of the Works is completed and taken over while the relatively small remaining portion remains uncompleted.
- The case when the remaining portion of the Works is delayed by the Employer or is believed to be so by the Contractor while the Contractor is still subject to the whole of the damages until the last portion of the Works is completed.
- The case when a portion of the Works is suspended for a reason that either party is not responsible for or in control of. An example of such scenario would be the late discovery of underground ruins while the largest share of the Works has been already taken over; or any other force majeure that may delay the completion of the Works.
- The case when the additional portion of the Works which remains uncompleted may be the result of a Variation that the Employer issued relatively late in the Project and which time implication is under debate by the parties.

All of the above issues would create non-favorable attitudes from the Contractor that may be materialized into claims and later on disputes.....etc.

C. What consequences of the modifications can be drawn?

As per the feedback received from the semi structured interview, the modification creates an unwelcome lack of confidence environment between the Employer and Contractor which would induce project cost and time escalation. Also, the said modification would most likely cause damage to Contractor's financing operation and financial stability. The measure may very well, in certain cases, render the Contractor insolvent.

Another risk that was sated and may arise out of this modification is the revengeful actions by the Contractor in case the Contractor believes the delay was not due to his actions. Those may include the stoppage of the Works which will in turn create a total loss of Project benefit to the Employer.

D. Any other proposition/ recommendation concerning the modifications being witnessed

The semi-structured interview noted that it is recommended that the Employer maintains some type of prorata Liquidated Damage amount that is proportional with the extent of Works completed.

Another option would be to refrain from taking over any parts of the Works until the whole of the Works are completed. This will maintain the pressure on the Contractor to finish the Works and to exert maximum effort in doing so.

A further positive proposition would be to combine the harsh measure created by the modification with the application of a bonus for early completion of the Works. This will give an incentive to the Contractor to speed up and finish the required works.

The above issues need to be accompanied with proper records of Variation Orders to be kept for reference to be used if needed in due course.

E. Benchmarking the Sub-Clause Modification

The guide for this standard form does consider reducing the amount of damages in case part of the works has been taken over. Also, and further an Expert feedback, this modification is not standard or common in international contracts. It may also be considered void under the law especially in cases when the value of the last portion of the uncompleted Works is within or close to the magnitude of the total Liquidated Damages that may get applied.

F. Conclusion(s) about the Modification

The conclusion that can be withdrawn from the above analysis need to consider the followings:

- The Employer would like the Contractor to finish all of the Works in a timely manner
- The Contractor would like to get a fair financial compensation given the mismatch between the Liquidated Damages amount and the proportion with the extent of Works completed. Therefore, it is recommended to combine it with a bonus for finishing the Works ahead of Schedule. This way the harsh and lenient measures balance out.
- Ensure proper records of Variation Orders to be kept for reference and used if needed in due course.

Proposed Modification- Guideline(s) for this sub-Clause

Delete the text of sub-Clause 47.2 and substitute with the following:

If, before the Time for Completion of the whole of the Works or, if applicable, any Section, a Taking-Over Certificate has been issued for any part of the Works or of a Section, the liquidated damages for delay in completion of the remainder of the Works or of that Section shall, for any period of delay after the date stated in such Taking-Over Certificate, and in the absence of alternative provisions in the Contract, shall not be reduced. The provisions of this Sub-Clause shall only apply to the rate of liquidated damages and shall not affect the limit thereof.

In the Event that the Contractor would finish the required Works prior the Time for Completion stated in the Appendix to Tender and the Taking Over of the Works has been

issued, the Contractor shall be entitled to get an additional financial compensation of XXXX per day to the period spanning between the Taking Over Certificate date and the Time for Completion.

5.9 Analysis of Modification Number 8
Standard Sub-Clause 51.2 Instructions for Variations

The Contractor shall not make any variation without an instruction of the Engineer. Provided that no instruction shall be required for increase or decrease in the quantity of any work where such increase or decrease is not the result of an instruction given under this Clause, but is the result of the quantities exceeding or being less than those stated in the Bill of Quantities.

Modifications

The modifications being introduced to Sub-Clause 51.2 can be summarized in the following table:

<i>Modification Selection Criteria</i>	Sources							Total Adoption
	Organization 1	Organization 2	Organization 3	Organization 4	Organization 5	Organization 6	Organization 7	
Majority MRI = 3 (previously considered)	2	3	3	1	3	3	3	
<i><u>Modification Description</u></i>	<i><u>Organizations Adoption</u></i>							
Delete and replace this Sub-Clause with Sub-Clause 51.1 along with slight modification		X	X		X	X		4
Delete this Sub-Clause							X	1
Keep the original wording and include details explaining further the issue of variation and re-measurement	X							-
Keep the original wording of this Sub-Clause without any modification				X				-

As per the above presentation, four of the seven organization mix between this Sub-Clause and Sub-Clause 51.1 Variations. Hence, this modification shall be put into further analysis.

Modifications to be analyzed

Delete the text of sub-Clause 51.2 and substitute with the following:

The Engineer shall make any variation of the form, quality or quantity of the Works or any part thereof that may, in his opinion, be necessary and for that purpose, or if for any other reason it shall, in his opinion, be appropriate, he shall have the authority to instruct, the Contractor to do and the Contractor shall do any of the following:

- (a) increase or decrease the quantity of any work included in the Contract;
- (b) omit any such work (including where the Employer subsequently gives such work to others);
- (c) change the character or quality or kind of any such work;
- (d) change the levels, lines, position and dimensions of any part of the Works;
- (e) execute additional work of any kind necessary for the completion of the Works; or
- (f) change any specified sequence or timing of construction of any part of the Works.

No such variation shall in any way vitiate or invalidate the Contract, but the effect, if any, of all such variations shall be valued in accordance with Clause 52. Provided that where the issue of an instruction to vary the Works is necessitated by some default of or breach of contract by the Contractor or for which he is responsible, any additional cost attributable to such default shall be borne by the Contractor.

A. Why the specific modification is being introduced?

During the semi structured interview, all seven organizations noted that the wording of this modification goes back to Sub-Clause 51.1 with slight modification.

The four organizations considering this modification noted that the adoption of this modification was intended to replace Sub-Clause 51.1 and not 51.2. It was even mentioned that this is a presentation mistake. Responder O2 commented “indeed the said clause should be numbered differently”.

But since this modification has been put into practice, it was agreed with all seven organizations to proceeding with the semi-structured interview given the current situation.

B. What are the implications of such modification?

As per the feedback received during the semi-structured interview, the modification may have the following implications:

- The elimination of the original wording of Sub-Clause 51.2 would entitle the Contractor to make any variation without an instruction of the Engineer. This single scenario can cause tremendous confusion in the administration of the Contract.
- Increase the risk of dispute by allowing the Contractor to vary the Works without Engineer’s instruction and expects to be paid for it.
- Entitle the Contractor to claim for Variations when the quantities vary, despite that a contract may be a re-measure one.

- Allow the Contractor to request a time implication as a result of a Variation as a result of variations in quantities under a re-measure contract.
- Cause an unexpected loss of profit situation to the Contractor when a negative Variation is issued which works are awarded to others. In theory, the Contractor would have worries that the Employer can “de-scope” the majority of the Works and award them to another contractor/s. Given this situation, it was recorded that the time implication in relation to this modification is averaged to three months for the 3 years project. This is put into discussion to cater for any disruption that the Contractor would experience as result of awarding part of the Works to other Contractors.
- Since the idea of other Contractors is now introduced, the Contractor is now worried about removing from his scope items that are highly priced, high profit items, and giving them to other Contractors. Accordingly, the bid price is also increased by 4% on average as per the feedback obtained.

C. What consequences of the modifications can be drawn?

As per the semi structured interview received input, the modification is unnecessary with respect to the elimination of Sub-Clause 51.2 in its totality as it provides assurance to the Employer against uninstructed Variations. The modification also causes duplicity between Sub-Clause 51.1 and Sub-Clause 51.2.

D. Any other proposition/ recommendation concerning the modifications being witnessed

All seven organizations noted that Sub-Clause 51.2 needs to be reinstated to its original wording. And if the Employer would favor to issue negative Variations and award their Works to others, the same need to be within a certain limited percentage of the total value of the Works in a similar way to Sub-Clause 52.3 Variations exceeding 15 percent. This way the bidders can account for such risk into their pricing

E. Benchmarking the Sub-Clause Modification

As per the guide for this standard form, the original wording of this Sub-Clause was intended to limit the Contractor’s claiming capability which is not the situation given the introduced modification.

F. Conclusion(s) about the Modification

As per the above analysis, the introduced modification is misplaced and leads to confusions in the administration of the variations. Accordingly, it is important to keep the original wording of this Sub-Clause.

On a different perspective, and if the Employer would like to omit some Works and give such works to other Contractors, the extent of the same need to be explicitly stated and included as modification to Sub-Clause 51.1.

Proposed Modification- Guideline(s) for this sub-Clause

Keep the original wording of this sub-clause

If the Employer would like to omit some Works and give such works to other Contractors, the extent of the same need to be explicitly stated and included as modification to Sub-Clause 51.1. Sub-Clause 51.1 Variations should be modified to consider for example:

Delete “(b) omit any such work (but not if the omitted work is to be carried out by the Employer or by another contractor),”

And replace with:

(b) omit any such work (the Employer have the right to give such work to others as long as the same is less than XX of the Contrcact Price and is considered part of the percentage of Sub-Clause 52.3 Variations exceeding XX percent);

5.10 Analysis of Modification Number 9

Standard Sub-Clause 52.3 Variations Exceeding 15 per cent

If, on the issue of the Taking-Over Certificate for the whole of the Works, it is found that as a result of:

- (a) all varied work valued under Sub-Clauses 52.1 and 52.2, and
- (b) all adjustments upon measurement of the estimated quantities set out in the Bill of Quantities, excluding Provisional Sums, day works and adjustments of price made under Clause 70,

but not from any other cause, there have been additions to or deductions from the Contract Price which taken together are in excess of 15 per cent of the "Effective Contract Price" (which for the purposes of this Sub-Clause shall mean the Contract Price, excluding Provisional Sums and allowance for dayworks, if any) then and in such event (subject to any action already taken under any other Sub-Clause of this Clause), after due consultation by the Engineer with the Employer and the Contractor, there shall be added to or deducted from the Contract Price such further sum as may be agreed between the Contractor and the Engineer or, failing agreement, determined by the Engineer having regard to the Contractor's Site and general overhead costs of the Contract. The Engineer shall notify the Contractor of any determination made under this Sub-Clause, with a copy to the Employer. Such sum shall be based only on the amount by which such additions or deductions shall be in excess of 15 per cent of the Effective Contract Price.

Modifications

The modifications being introduced to Sub-Clause 52.3 can be summarized in the following table:

Modification Selection Criteria	Sources							Total Adoption
	Organization 1	Organization 2	Organization 3	Organization 4	Organization 5	Organization 6	Organization 7	
Majority MRI = 3 (previously considered)	3	2	3	3	3	3	2	
<u>Modification Description</u>	<u>Organizations Adoption</u>							
Delete the 15% and replace it with 20 or 30%		X					X	-
Delete this Sub-Clause	X		X	X	X	X		5

As per the above presentation, the governing modification with five organizations adopting the same is the deletion of this Sub-Clause in full which will be considered for further analysis.

Modifications to be analyzed

Delete sub-Clause 52.3

A. Why the specific modification is being introduced?

The semi structured interview highlighted that reasons behind the said modification introduction was to:

- Protect the Employer by eliminating any remedies that would allow the modification of the rates or the Price of the Contract in case the cumulative effect of variations exceeds (or is less than) the 15% mark. Confirming this, Responder O1 stated that “the deletion of this clause would cover the Employer against large modifications”.
- Protect the Employer by allowing the Employer to de-scope (or add) large portions of the work (beyond 15%) without having to be concerned about the effect of this clause in terms of any additional entitlement to the Contractor.

B. What are the implications of such modification?

Through the semi structured interview it was recorded that the given modification would certainly impact the pricing of the Works within the tender stage. The feedback received in relation to the same can be averaged to 3% increase of the Contract Price to cover for the unknown risk since the bracket is now removed. No time implication was recorded since any change shall now be treated as variation.

Also, it was noted that some bidders may decline from bidding since the risk may be too high to manage.

From a different perspective as noted above, the purpose of the deletion of this Sub-Clause was to protect the Employer against claims; it can have the opposite effect by allowing the Contractor to resort to claim for additional costs, against any variation, since such bracket (i.e. the 15%) has not been agreed. Also, the Contractor is at liberty to claim for price fluctuation even for lower bracket than 15% changes in scope.

C. What consequences of the modifications can be drawn?

Throughout discussions within the semi structured interviews, the following consequences were shared:

- It leaves room for confusion and dispute regarding how to deal with cumulative (or single) variations that reduce or increase the Contract Price by over 15%.
- It removes a remedy measures that is beneficial to both parties.

D. Any other proposition/ recommendation concerning the modifications being witnessed

The semi-structured interview recorded that the Employer has other better alternative to protect himself from claims for price fluctuation due to variations as follows:

- Keep the Sub-Clause but increase the bracket from 15% to other larger values.
- OR
- Delete the clause and have Contractor agree to working that does not allow the Contractor to claim for any changes in the volume of the Works which would highly inflate the price.

E. Benchmarking the Sub-Clause Modification

The deletion of this Sub-Clause is not referenced in the guide for this standard form. This Sub-Clause is introduced to cover for “fixed or lump sum character and not directly related to the amount of work done”. Indeed, “the Contractor may gain on his fixed on-costs if the overall value is increased, or lose if the total is less than that in the original Bill” As per the guide.

F. Conclusion(s) about the Modification

As stated above, the modification removes a remedy measures that is beneficial to both parties and widens the risk on the Contractor which in turn raises the bid price to cover for such unforeseen risk.

Therefore, it is important to keep the original wording and include a specific percentage which would allow the Employer to feel secured and the Contractor to be able to assess the risk involved.

Proposed Modification- Guideline(s) for this sub-Clause

Replace the number and words in the title of this clause "exceeding 15 percent" with "exceeding XX percent". Replace the number and words in the second line, and second last line or the 3rd paragraph "in excess of 15 percent" with "in excess of XX percent".

5.11 Analysis of Modification Number 10
Standard Sub-Clause 55.1: Quantities

The quantities set out in the Bill of Quantities are the estimated quantities for the Works, and they are not to be taken as the actual and correct quantities of the Works to be executed by the Contractor in fulfilment of his obligations under the Contract.

Modifications

The modifications being introduced to Sub-Clause 55.1 can be summarized in the following table:

<i>Modification Selection Criteria</i>	Sources							Total Adoption
	Organization 1	Organization 2	Organization 3	Organization 4	Organization 5	Organization 6	Organization 7	
Majority MRI = 3 (previously considered)	3	2	3	2	3	3	2	
<u><i>Modification Description</i></u>	<u><i>Organizations Adoption</i></u>							
Delete and replace this Sub-Clause by holding the Contractor responsible for any quantity change consequences			X		X	X		3
Delete and replace this Sub-Clause	X							1
Modify the existing wording to include that the Contractor is to provide an estimate of the final quantities within a time frame.		X		X			X	-

From the above table, three of the four organizations do hold the contractor responsible for any change for any quantity within the contract. not consider any financial consequences. Accordingly, the modification being put into further analysis considers the same.

Modifications to be analyzed

Delete the text of sub-Clause 55.1 and substitute with the following:

The Quantities (as defined in and set out in the Breakdown of the Lump Sum) shall be verified by the Contractor before submitting the Tender.

The Contractor is responsible for the accuracy of the Quantities and no adjustment will be made in the event of any error or omission in the Quantities being discovered after the signing of the Contract. The rates in the Breakdown of the Lump Sum will be used to value any variations which may be instructed pursuant to this Contract.

A. Why the specific modification is being introduced?

The semi structured interview highlighted that the governing reasons behind the said modification can be summarized as follows:

- To convert the Contract from the Re-measure type to the Lump Sum one hence protects the Employer from any quantity change or re-measurement error. Responder O2 noted “Employer should not worry about quantities change anymore” hence the contract price is independent quantities.
- To specify the function of the rates with respect to their use in the valuation of variations. However, as per discussion, such term is placed incorrectly in this clause as the clause title refers purely to Quantities. The rates issue is addressed in other clauses namely in the Variation’s clauses.

B. What are the implications of such modification?

The feedback received pertaining to this modification was split into two criteria:

- There is no implication if the Contract is a Lump Sum type. However, there will be a drastic impact in case it is the Re-measure type. The issues that may arise will involve executed quantities that the Employer will not want to pay for.
- Another issue that may arise is the extent of quantities versus any differences between the signed BOQ and the final drawings. A common case is the misalignment between certain line items of the BOQ versus the quantities executed in accordance with the final drawings. What is required from the bidders is to verify such quantities and flag them to the Employer during the Q&A phase. Such an expectation by the Employer usually remains unachieved. Bidders typically are not given sufficient time to conduct accurate take offs from the tender drawings. Without such measure there is always a risk of inconsistency between the BOQ and the drawings. Another issue that may arise is the inconsistency between the tender and final drawings.

Accordingly, by this modification, the Employer ensures that the risk of variation in quantities between tender versus final is carried totally by the Contractor. However in doing so it is likely exposing the Contractual relationship to dispute and claims by the Contractor.

The average impact in relation to project cost is at the order of 2% of the project cost with almost no impact in relation to time.

C. What consequences of the modifications can be drawn?

The semi structured interview noted that:

- The part related to the LS poses no consequence provided that the Contract is a LS type.
- The part related to the accuracy (or actually inaccuracy) of the quantities does indeed pose a heavy risk on the Contactor and is likely the cause of claims and disputes and Contract price escalation.

D. Any other proposition/ recommendation concerning the modifications being witnessed

Further to the discussions that have taken place within the Semi structured interview the following was recommended:

The modification defining the Contract as a LS type is an acceptable one. The modification addressing the quantities poses a risk and must be modified as follows:

- Allow sufficient time to the bidders to perform the necessary takeoff to verify the quantities. There is another risk which has to do with the common case of incompleteness of the drawings at the bidding phase. In such case even if an accurate take-off will not eliminate the risk of variation in quantities between the tender and final versions. There will always be the risk of differences between such quantities and the one pertaining to the final drawings.
- Allow certain tolerance in the overall quantities (say 3% + or -) to absorb any variance between the quantities pertaining to the tender drawings and the final ones. Such percentage will be paid as a re-measure in case it occurs. It will basically act as buffer between the quantities of the tender stage which the contractor will have to be held responsible for under the LS and the differences that are generated by the final dwgs.
- Remove the reference about the rates and re-allocate it where it belongs in the Contract. This clause is only about quantities.
- Hold the contractor responsible for the quantities based on the bidding tender drawings but allow for re-measure of items that are affected due to differences between the tender drawings and the final ones.

E. Benchmarking the Sub-Clause Modification

As per this standard Guide, “The quantities in the Bill of Quantities are the quantities of work estimated when the Tender documents are prepared based upon the Drawings and the Specification. The actual quantities of work performed in the execution of the Contract are to be ascertained by measurement.” Hence, reassessment of quantities is part of the said sub-clause.

F. Conclusion(s) about the Modification

Given the above issues, it can be concluded that the Clause can be modified to account for any unforeseen changes in quantities as explained above within a certain tolerance.

Since the rates issue is dealt with in other Sub-Clauses 60.1, 52.1, 52.3...etc., the reference to the rates should be removed.

Proposed Modification- Guideline(s) for this sub-Clause

Delete the text of sub-Clause 55.1 and substitute with the following:

The Quantities (as defined in and set out in the Breakdown of the Lump Sum) shall be verified by the Contractor before submitting the Tender. The Contractor is responsible for the accuracy of the Quantities and no adjustment will be made in the event of any error or omission in the Quantities being discovered after the signing of the Contract and up to 5% of the quantities deviation.

5.12 Analysis of Modification Number 11
Standard Sub-Clause 57.1: Method of Measurement

The Works shall be measured net, notwithstanding any general or local custom, except where otherwise provided for in the Contract.

Modifications

The nature modifications being introduced to Sub-Clause 57.1 can be summarized in the following table:

<i>Modification Selection Criteria</i>	Sources							Total Adoption
	Organization 1	Organization 2	Organization 3	Organization 4	Organization 5	Organization 6	Organization 7	
Majority MRI = 3 (previously considered)	2	2	2	3	3	3	3	
<i><u>Modification Description</u></i>	<i><u>Organizations Adoption</u></i>							
Delete and replace this Sub-Clause by giving direct reference to the Bill of Quantity				X		X	X	3
Delete this Sub-Clause					X			1
Keep the original wording of this Sub-Clause but include reference to the specification	X	X	X					-

From the above table, three of the four organizations consider deleting the said sub-Clause and replace it by giving direct reference to the bill of Quantity and its corresponding preamble. Accordingly, the modification being put into further analysis considers the same.

Modifications to be analyzed

Delete the text of sub-Clause 57.1 and substitute with the following:

The method of measurement used for any subsequent measurement of variations shall be as stated in the preambles of the bill of quantities.

A. Why the specific modification is being introduced?

The semi structured interview highlighted that the said modification is introduced to clarify the method of measurement. In fact all seven organizations noted that the original clause calls for just for that i.e. by making the reference “otherwise provided for in the Contract”. Hence, despite the fact that the original Sub-Clause is being deleted, the modification can be fitted without the Clause deletion.

B. What are the implications of such modification?

The feedback received is that there is no positive or negative implication from this modification. All it is doing is basically repeating what the original clause calls for. Except that it is more precise as to where to find such method of measurement among the Contract documents.

C. What consequences of the modifications can be drawn?

The modification is beneficial in a way as it prescribes exactly how the measurement will be made and where such method is found in the Contract.

D. Any other proposition/ recommendation concerning the modifications being witnessed

Since the modification seems to be beneficial, it was recommended to keep the original wording but specify where the method of measurement is found in the Contract.

E. Benchmarking the Sub-Clause Modification

As per this Standard form guide, “this Sub-Clause requires measurements to be taken net where no other principle is prescribed”. However, “there may be deviations from the general principle” which is in line with our above discussion.

It is important to note that on June 1979, the Royal Institution of Chartered Surveyors (RICS) published the Principles of Measurement International for Works of Construction with further reprint dates. The same can be used as guide while considering the method of measurement. The cover page of the said reference is found in Appendix J.

F. Conclusion(s) about the Modification

As per the above discussions, the modification is acceptable and compatible with the original clause. Also, it is beneficial to specify where the method of measurement is found in the Contract.

Proposed Modification- Guideline(s) for this sub-Clause

Delete the text of sub-Clause 57.1 and substitute with the following:

The method of measurement used for any subsequent measurement of variations shall be as stated in the preambles of the bill of quantities.

5.13 Analysis of Modification Number 12
Standard Sub-Clause 67.1: Engineer's Decision

If a dispute of any kind whatsoever arises between the Employer and the Contractor in connection with, or arising out of, the Contract or the execution of the Works, whether during the execution of the Works or after their completion and whether before or after repudiation or other termination of the Contract, including any dispute as to any opinion, instruction, determination, certificate or valuation of the Engineer, the matter in dispute shall, in the first place, be referred in writing to the Engineer, with a copy to the other party. Such reference shall state that it is made pursuant to this Clause. No later than the eighty-fourth day after the day on which he received such reference the Engineer shall give notice of his decision to the Employer and the Contractor. Such decision shall state that it is made pursuant to this Clause.

Unless the Contract has already been repudiated or terminated, the Contractor shall, in every case, continue to proceed with the Works with all due diligence and the Contractor and the Employer shall give effect forthwith to every such decision of the Engineer unless and until the same shall be revised, as hereinafter provided, in an amicable settlement or an arbitral award.

If either the Employer or the Contractor be dissatisfied with any decision of the Engineer, or if the Engineer fails to give notice of his decision on or before the eighty-fourth day after the day on which he received the reference, then either the Employer or the Contractor may, on or before the seventieth day after the day on which he received notice of such decision, or on or before the seventieth day after the day on which the said period of 84 days expired, as the case may be, give notice to the other party, with a copy for information to the Engineer, of his intention to commence arbitration, as hereinafter provided, as to the matter in dispute. Such notice shall establish the entitlement of the party giving the same to commence arbitration, as hereinafter provided, as to such dispute and, subject to Sub-Clause 67.4, no arbitration in respect thereof may be commenced unless such notice is given.

If the Engineer has given notice of his decision as to a matter in dispute to the Employer and the Contractor and no notice of intention to commence arbitration as to such dispute has been given by either the Employer or the Contractor on or before the seventieth day after the day on which the parties received notice as to such decision from the Engineer, the said decision shall become final and binding upon the Employer and the Contractor.

Modifications

The modifications being introduced to Sub-Clause 67.1 can be summarized in the following table:

<i>Modification Selection Criteria</i>	Sources							Total Adoption
	Organization 1	Organization 2	Organization 3	Organization 4	Organization 5	Organization 6	Organization 7	
Majority MRI = 3 (previously considered)	2	3	2	3	3	2	3	
<i><u>Modification Description</u></i>	<i><u>Organizations Adoption</u></i>							
Delete and replace this Sub-Clause by referring every dispute to a Dispute Adjudication Board (DAB)		X			X		X	3
Delete and replace this Sub-Clause by considering any determination as a decision				X				1
Keep the original wording of this Sub-Clause but change the periods specified	X		X			X		-

From the above table, three of the four organizations consider replacing the Engineer's decision to a DAB in dealing with disputes that may arise between the parties. Accordingly, the modification being put into further analysis considers the same.

Modifications to be analyzed

Delete sub-Clause 67.1 and substitute with the following:

Any dispute is forwarded to the Dispute Adjudication Board (DAB) of the project.

A. Why the specific modification is being introduced?

The semi structured interview highlighted that the reason behind the said modification is to transfer the determination responsibility from the Engineer to an Adjudication Board. This considered since it was noted that it is difficult for the Engineer to remain neutral with his determination noting that his fees are paid by the Employer. In agreement, Responder O2

commented “the Engineer eventually is employed by the Employer and it would be difficult for him to remain impartial”

B. What are the implications of such modification?

The semi structured interview outcome revealed that in one way the implication is helpful to the Contactor as he can rely on a neutral body to decide the disputes rather than the Engineer who may be biased towards the Employer. However, the removal of the details and the specifics about how, when and for which reasons to approach the DAB leaves lots of room for confusion between the parties. This may also render such approach not feasible which in turn is likely to create more confusion between the parties. The issues that are likely to arise as a result of lack of specifics as highlighted within the semi structured interviews are as follows:

- The “in connection with, or arising out of, the Contract or the execution of the Works” is removed. This means that any dispute whether in or outside the Contract can now be decided thru the DAB. In theory, if a dispute arises between the parties under another contract or for any reason outside the Contract it can still be resolved under this procedure. It is important to have the decision over disputes be limited to the Contract and the Works.
- The “after their completion (i.e. Works) and whether before or after termination of the Contract” is removed. This now leaves the parties without the means to resolve their dispute in case such dispute occurs after the completion of the Works and prior to the discharge of the Contract.
- The definition as to what a dispute may or may not cover is removed. While a dispute is clearly defined ‘including any dispute as to any opinion, instruction, determination, certificate or valuation of the Engineer’ the removal of such clarification means that a scenario may now arise where one party calls an issue to be under dispute while the other may negate or deny such classification. Therefore the modification allows one party to utilize this lack of definition to its advantage and to evade acknowledging a dispute. Taken to an extreme, the Employer (who is the likely party to take advantage of such situation) can continue to consider the matter (raised by the Contractor) not in dispute and thus deprive the Contractor from pursuing his right with DAB for entitlement.

- The 'in writing' is removed which means that one party can consider verbal communication as an acceptable means of notification. This creates a risk for additional disputes as a result of this situation.
- The 'with a copy to the other party' is removed. This allows the Contractor (who is the likely candidate for such notification) to not copy the Employer in a timely manner. However, it is most likely that the DAB will notify the Employer when it receives notification from the Contractor.
- The time element 'No later than the eighty-fourth day after the day on which he received such reference the Engineer shall give notice of his decision to the Employer and the Contractor.' is removed. This leaves the period open as to when the DAB can respond. In such situation the party submitting the matter for dispute resolution is left without a limit as to when a decision must be received. The other party (Employer) is likely to take advantage of such situation.
- The 'Contractor shall, in every case, continue to proceed with the Works with all due diligence' is removed. This leaves the Contract in a very risky situation as the Contractor may decide to stop the Works until a decision is made. In turn, such a situation will be detrimental to the timely completion of the Project.
- The removal of 'the Contractor and the Employer shall give effect forthwith to every such decision of the Engineer unless and until the same shall be revised, as hereinafter provided, in an amicable settlement or an arbitral award.' poses a risk of one party declining to abide by the decision of the DAB. The modification also eliminates the remedy of the escalation of the dispute to amicable or arbitration measure. As a result, total confusion may arise in respect as to how the dispute is to be resolved in case one party is not satisfied with the decision of the DAB.
- The removal of 'If either the Employer or the Contractor be dissatisfied with any decision of the Engineer, or if the Engineer fails to give notice of his decision on or before the eighty-fourth day after the day on which he received the reference, then either the Employer or the Contractor may, on or before the seventieth day after the day on which he received notice of such decision, or on or before the seventieth day after the day on which the said period of 84 days expired, as the case may be, give notice to the other party, with a copy for information to the Engineer, of his intention to commence arbitration,' leaves the parties without a timing means to solve their dispute in case dissatisfied with the decision of the DAB.

- The reference to clause 67.4 is removed thru the elongation of “as hereinafter provided, as to the matter in dispute. Such notice shall establish the entitlement of the party giving the same to commence arbitration, as hereinafter provided, as to such dispute and, subject to Sub-Clause 67.4, no arbitration in respect thereof may be commenced unless such notice is given”. This leaves the procedure as to how to commence the arbitration process undefined. As such the situation may become so confusing that the unsatisfied party may resort to the courts for lack of specificity in the Contract.
- The removal of “If the Engineer has given notice of his decision as to a matter in dispute to the Employer and the Contractor and no notice of intention to commence arbitration as to such dispute has been given by either the Employer or the Contractor on or before the seventieth day after the day on which the parties received notice as to such decision from the Engineer, the said decision shall become final and binding upon the Employer and the Contractor.” leaves the risk of one party ignoring the DAB decision irrespective of the time that elapses after the decision. The modification also makes the parties lose the privilege of the binding effect taking place after a certain period has elapsed.
- This modification affects both the project duration and project price. This is attributed to the fact that Contractors are afraid from the absence of the proper mechanism to address any disputed issue. The feedback received considers an average increase in project duration of half a month and 2% average increase in the project price.

C. What consequences of the modifications can be drawn?

During the semi structured interviews, it was noted that this modification is an important modification in terms of its transfer of the responsibility of dispute resolution from the Engineer to the more unbiased DAB entity. However, the specifics and the procedure are completely eliminated. This situation leaves both parties at a loss and in confusion as to how and when to implement the DAB and whether the DAB’s decision is binding and what happens of one or both parties are unsatisfied with the DAB decision. Further, the reference to arbitration is removed which again leaves the means undecided as to how to proceed further in case their dispute remains unresolved. Also lost is the provision about the binding effect of the DAB decision.

D. Any other proposition/ recommendation concerning the modifications being witnessed

Recording the positive feedback received in relation to the introduction of this modification, it is found important to maintain the original mechanism for dispute resolution stated in the original clause but to introduce DAB instead of Engineer.

E. Benchmarking the Sub-Clause Modification

Traditionally disputes were initially determined by the Engineer within 84 days of reference, then by arbitration under ICC Rules (Sub-Clauses 67.1, 67.3 FIDIC, 4th edition 1987). Arbitration had to be noticed within 70 days of Engineer's decision or after the period for such decision had expired (Sub-Clause 67.1).

The 1999 series of the Books, has changed this dispute resolution system. The Engineer is no longer a quasi-arbitrator and has been replaced in so far by a Dispute Adjudication Board (Sub-clauses 20.2, 20.4). If any dispute arises the parties to the contract may refer it to the Dispute Adjudication Board. A nomination procedure for the appointment of the DAB members is ruled in Sub-clause 20.2. The DAB has full power to open up, review and revise any certificate, determination, instruction, opinion or valuation of the Engineer.

The being introduced modification tries to introduce DAB to the FIDIC, 4th edition red book in a short brief way which is not common for such important clause.

F. Conclusion(s) about the Modification

Partially beneficial and partially possess a high risk of dispute as a result of lack of clarification of the procedure for pursuing the DAB decision. Therefore, and as explained in the previous section, it is highly recommended to keep the original mechanism but introducing DAB instead of Engineer for dispute resolution. Of course, details about DAB formation, nomination and other related details needs to be introduced.

Proposed Modification- Guideline(s) for this sub-Clause

Replace "Engineer" with the "DAB".

5.14 Analysis of Modification Number 13
Standard Sub-Clause 67.2: Amicable Settlement

Where notice of intention to commence arbitration as to a dispute has been given in accordance with Sub-Clause 67.1, arbitration of such dispute shall not be commenced unless an attempt has first been made by the parties to settle such dispute amicably. Provided that, unless the parties otherwise agree, arbitration may be commenced on or after the fifty-sixth day after the day on which notice of intention to commence arbitration of such dispute was given, whether or not any attempt at amicable settlement thereof has been made.

Modifications

The modifications being introduced to Sub-Clause 67.2 can be summarized in the following table:

<i>Modification Selection Criteria</i>	Sources							Total Adoption
	Organization 1	Organization 2	Organization 3	Organization 4	Organization 5	Organization 6	Organization 7	
Majority MRI = 3 (previously considered)	2	3	3	3	2	2	3	
<u><i>Modification Description</i></u>	<u><i>Organizations Adoption</i></u>							
Delete and replace this Sub-Clause by simplifying the procedure for Amicable Settlement		X	X				X	3
Delete this Sub-Clause				X				1
Keep the original wording of this Sub-Clause but increase the duration of <i>fifty-sixth</i> days	X				X	X		-

From the above table, three of the four organizations consider a simplified way in engaging in amicable settlement. Accordingly, the modification being put into further analysis considers the same.

Modifications to be analyzed

Delete the text of sub-Clause 67.2 and substitute with the following:

Amicable Settlement can be considered on all issues where the Employer and the Contractor don't agree. Amicable settlement is not bound to any duration and timing.

A. Why the specific modification is being introduced?

The semi structured interview highlighted that all seven organizations consider the main reason for the introduction of the given modification is to simplify the means for engaging into the amicable settlement remedy. The function of this clause is altered from being a remedy for "dispute settlement" to the opening of "a communication line" between the Parties, thus allowing any and all issues whether under dispute or otherwise, to be discussed without any limitation which would enhance communications. In line with this, it is worth noting that Responder O1 commented "there shouldn't be any harm in communication".

B. What are the implications of such modification?

Concerning the feedback received in relation to the implication of the said modification the same can be summarized as follows:

1. While the original amicable settlement clause is dedicated to matters that have become subject to a "Notice of arbitration", the current modification eliminates the intricate relationship with clause 67.1 and opens the door wide for all issues to be subject to amicable settlement. Such matters can consist of, among others, poor weather, site conditions, material cost increases, design changes and delays, Employer's or Contractor's intent to terminate the Contract, or any combination of these.
2. While all matters must initially be referred to the Engineer prior to the parties resorting to any other remedies under the Contract including matters of dispute, this clause 'bypasses' the Engineer's role and allows a direct line of communication between the two parties without the Engineer's involvement. Such exclusive line of communication has the potential of causing serious disruption to the project in the absence of a recording party and the center of all communication, the Engineer, noting that the original form of FIDIC intentionally "bars" the Parties from discussing issues under the Contract without the Engineer's involvement. The purpose for such

mechanism is to allow the Engineer to exercise an unbiased role in administering the Contract.

3. The said modification affects the duration of the works in the absence of a specified time frame to conclude on specific issues. The feedback received considers an increase in the project duration of a half month. No cost related impact was recorded.

C. What consequences of the modifications can be drawn?

Throughout the discussions held within the semi-structured interview, it was recorded that it is important to provide a time element to the amicable settlement remedy; otherwise one party may take advantage of such procedure at a time when amicable settlement is no longer viable. As an example, one party may insist on invoking amicable settlement while the other party has given up and wants to proceed with elevating the dispute to arbitration. Accordingly, failure to clarify how it should last and when can it be invoked can turn such remedy to a dispute by itself.

D. Any other proposition/ recommendation concerning the modifications being witnessed

It was noted during the semi structured interview, and confirmed by the Experts, that amicable settlement has evolved to a variety of types of venues since the drafting of the FIDIC 4th edition. There is a wide spectrum of remedies that fall under amicable settlement, such as mediation, and conciliation to name a few. Some people may regard adjudication to fall under amicable settlement. Therefore, it is important to specify which type of amicable settlement the Parties are to resort. Such specification can be either defined in the Definitions section of the Contract or named in this clause. Again, Failure to clarify what amicable settlement entails, how it should last and when can it be invoked can turn such remedy to a dispute by itself.

E. Benchmarking the Sub-Clause Modification

This standard guide stresses on the control of the duration given for amicable settlement hence this Sub-Clause “sets a time limit so that the settlement discussions will not be prolonged indefinitely.” Also, the guide considers it to be “advantageous to agree to a procedure for amicable settlement at an early stage in the Contract before any dispute arises.”

F. Conclusion(s) about the Modification

The above can be summarized as follows:

1. the Engineer need to be involved in any amicable settlement issue
2. the amicable settlement issue need to be limited by a certain time frame
3. Add a mediation center or rule that is to be followed in case amicable settlement is invoked.

Proposed Modification- Guideline(s) for this sub-Clause

Add at the End of the Sub-Clause 67.1:

Both Parties accept to consider XXXXX mediation center to be followed in amicable settlement

Parties may elect to revert to amicable settlement on any project related issue only if:

(a) Both parties agrees on the issue to be settled by giving notice in writing to the Engineer showing their explicit willingness to amicably settle the said issue;

(b) The duration for amicable settlement per issue shall not exceed XXX days from the date of the receipt of both notices from the Contractor and the employer;

5.15 Analysis of Modification Number 14
Standard Sub-Clause 67.3 Arbitration

Any dispute in respect of which:

(a) the decision, if any, of the Engineer has not become final and binding pursuant to Sub-Clause 67.1, and

(b) amicable settlement has not been reached within the period stated in Sub-Clause 67.2

shall be finally settled, unless otherwise specified in the Contract, under the Rules of Conciliation and Arbitration of the International Chamber of Commerce by one or more arbitrators appointed under such Rules. The said arbitrator/s shall have full power to open up, review and revise any decision, opinion, instruction, determination, certificate or valuation of the Engineer related to the dispute.

Neither party shall be limited in the proceedings before such arbitrator/s to the evidence or arguments put before the Engineer for the purpose of obtaining his said decision pursuant to Sub-Clause 67.1. No such decision shall disqualify the Engineer from being called as a witness and giving evidence before the arbitrator/s on any matter whatsoever relevant to the dispute.

Arbitration may be commenced prior to or after completion of the Works, provided that the obligations of the Employer, the Engineer and the Contractor shall not be altered by reason of the arbitration being conducted during the progress of the Works.

Modifications

The modifications being introduced to Sub-Clause 67.3 can be summarized in the following table:

<i>Modification Selection Criteria</i>	Sources							Total Adoption
	Organization 1	Organization 2	Organization 3	Organization 4	Organization 5	Organization 6	Organization 7	
Majority MRI = 3 (previously considered)	3	3	2	3	3	2	3	
<i><u>Modification Description</u></i>	<i><u>Organizations Adoption</u></i>							
Delete and replace this Sub-Clause by considering concise wording for the Arbitration sub-clause	X			X	X			3
Delete and replace this Sub-Clause by considering a litigation for dispute resolution							X	1
Delete this Sub-Clause		X						1
Keep the original wording of this Sub-Clause and include arbitration details			X			X		-

From the above table, three of the five modifications consider concise wording for the Arbitration sub-clause. Accordingly, the modification being put into further analysis considers the same.

Modifications to be analyzed

Delete sub-Clause 67.3 and substitute with the following:

Any dispute, controversy or claim arising out of or relating to this agreement or the breach, termination or invalidity thereof shall be finally settled by arbitration held according to the Rules of XXXXXXXXXX (by which the Parties undertake to abide) by a sole arbitrator appointed in accordance with the said Rules.

The arbitration proceedings shall be held in XXXXXXXX and conducted in the English language. The arbitral award shall be binding upon the Parties and shall not be subject to any appeal in any court. It shall deal with the question of costs of arbitration and all matters related therewith.

The Arbitrator will determine the amount of the Arbitration fees and costs and the party who should bear the payment.

A. Why the specific modification is being introduced?

The semi structured interview highlighted that the governing reasons behind the said modification is to simplify the clause into a supposedly more straightforward procedure that direct the parties to the rules of arbitration, the use of a sole arbitrator, the place of arbitration and the barring of any appeal. In agreement, Responder O5 commented “the procedure for Arbitration as stated in its original wording is lengthy”

B. What are the implications of such modification?

The implications received in relation to the introduced modification noted that despite the fact that the given modification does basically simplify the process that would direct the parties to Arbitration, the same is not conventional and has the following impacts:

1. The modification eliminates the intricate relationship with clauses 67.1 and 67.2. While a dispute is carefully channeled in the 4th FIDIC from its conception thru the Engineer, who has to make his determination prior to allowing the parties to escalate their difference to amicable settlement and then to arbitration, this modification annuls such procedure. Therefore, the parties are now at liberty to call any issue a dispute and to pursue it under arbitration. In doing so, the Engineer is totally bypassed and any dispute shall directly be referred to Arbitration without trying other simpler alternatives. exhaustively trying to resolve the same prior
2. The elimination of the terms “*The said arbitrator/s shall have full power to open up, review and revise any decision, opinion, instruction, determination, certificate or valuation of the Engineer related to the dispute*” and “*Neither party shall be limited in the proceedings before such arbitrator/s to the evidence or arguments put before the Engineer for the purpose of obtaining his said decision pursuant to Sub-Clause 67.1*”

Are likely to cause the parties to differ as to what matters and evidence can and cannot be admitted in the arbitration process.

3. The elimination of the term “*No such decision shall disqualify the Engineer from being called as a witness and giving evidence before the arbitrator/s on any matter whatsoever relevant to the dispute*” adds confusion as to what role the Engineer can still have in the arbitration. One party may argue any involvement of the Engineer in

the arbitration since it is not mentioned in the Contract, thus causing the loss of an essential source of evidence in the arbitration.

4. The elimination of the term *"Arbitration may be commenced prior to or after completion of the Works, provided that the obligations of the Employer, the Engineer and the Contractor shall not be altered by reason of the arbitration being conducted during the progress of the Works."* Is likely to cause the parties to differ on when the arbitration can be started and whether the progress of the Works is affected. In one case, the Contractor may utilize the modification to its advantage by stopping the Works until the dispute is resolved. Another scenario would be the Employer discontinuing its payment until the arbitration process is over. Both cases are detrimental to the Project and to both Parties.
5. The feedback received from the seven companies considers and average increase in the project duration of half a month for a three years project duration since a lot of essential process details are being skipped in that specific modification. The average project cost should be increased by 1 % to cater for the unfamiliarity with the being introduced procedure for arbitration.

C. What consequences of the modifications can be drawn?

Throughout the semi structured interview it was recorded that the modification takes away several of the benefits that are provided by the original clause. Those can be summarized as follows:

1. Elimination of the clarification of the extent of scope of matters covered in the arbitration.
2. Elimination of the role of the Engineer in the phases leading to the disputes.
3. Elimination of the intricate relationship that exists with clauses 67.1 and 67.2.
4. Elimination of the role of the Engineer as a source of evidence in the arbitration
5. Elimination of the Parties to continue the performance of their obligations under the Contract while the arbitration is in progress
6. Elimination of the provision as to when arbitration can be started.

The above issues do form an important aspect of the original sub-clause and need not to be skipped.

D. Any other proposition/ recommendation concerning the modifications being witnessed

From the above, as an obvious answer to this question is to maintain the version of the 4th edition and add any specificity that Employer and Contractor need to consider in the Arbitration.

E. Benchmarking the Sub-Clause Modification

This standard guide consider that “*where it is decided that a settlement of dispute procedure, other than that of the International Chamber of Commerce (ICC), should be used the Clause may be varied.*” and provides example in relation to the same. Also, the guide notes that “*Where alternatives to ICC are considered care should be taken to establish that the favored alternative is appropriate for the circumstances of the Contract and that the wording of Clause 67 is checked and amended as may be necessary to avoid any ambiguity with the alternative.*”

F. Conclusion(s) about the Modification

Based on the above, the modification introduced eliminates major benefits that did exist in the original sub-clause wording. Accordingly, the original wording needs to be kept with some detailed particulars to be introduced if need be and being different than ICC.

Proposed Modification- Guideline(s) for this sub-Clause

Keep the original wording of the Sub-Clause and add the followings at the End:

Add at the end the following:

The venue of the Arbitration shall be XXXXXXXXX

The Language of the Arbitration shall be XXXXXXX

The Law of the Arbitration shall be the XXXXXXX Laws

5.16 Analysis of Modification Number 15

Standard Sub-Clause 67.4: Failure to Comply with Engineer's Decision

Where neither the Employer nor the Contractor has given notice of intention to commence arbitration of a dispute within the period stated in Sub-Clause 67.1 and the related decision has become final and binding, either party may, if the other party fails to comply with such decision, and without prejudice to any other rights it may have, refer the failure to arbitration in accordance with Sub-Clause 67.3. The provisions of Sub-Clauses 67.1 and 67.2 shall not apply to any such reference.

Modifications

The modifications being introduced to Sub-Clause 67.4 can be summarized in the following table:

<i>Modification Selection Criteria</i>	Sources							Total Adoption
	Organization 1	Organization 2	Organization 3	Organization 4	Organization 5	Organization 6	Organization 7	
Majority MRI = 3 (previously considered)	3	3	3	3	3	3	3	
<i><u>Modification Description</u></i>	<i><u>Organizations Adoption</u></i>							
Consider the Arbitral award to be final.	X	X	X	X		X	X	6
Delete this Sub-Clause					X			1

From the above table, six of the seven organizations consider that the Arbitral award as final. Accordingly, the modification being put into further analysis considers the same.

Modifications to be analyzed

Add at the end of sub-Clause 67.4 the following:

The arbitral award in relation to the failure to comply with Engineer's Decision shall be binding upon the Parties and shall not be subject to any appeal in any court.

A. Why the specific modification is being introduced?

The semi structured interview highlighted that the governing reason behind the said modification is to make sure that both parties need to respect the durations stipulated under Clause 67 and also respect the Engineer's decision if not contested within the said durations.

Confirming this, Responder O1 mentioned that “it is important to get issues concluded and not to keep on dragging non solved ones till the end of the project”

B. What are the implications of such modification?

Despite the fact that the given modification prevents any appeal of the arbitral award in relation to the failure to comply with Engineer’s Decision, the feedback received pertaining to this modification was unexpected since all seven organizations showed commitment to time periods. Hence, no impact on time and also no impact on cost were recorded by any of the seven organizations.

C. What consequences of the modifications can be drawn?

Since the same did not reveal any impact on the project, it seems that the non-possibility of appeal forced project parties to act responsibly to the durations given and would put conclusions to disputable issues rather than keeping on dragging the same further.

D. Any other proposition/ recommendation concerning the modifications being witnessed

The semi structured interview revealed that this modification is useful with no impact on the project. Accordingly, this modification needs to be part of the favorable modifications to the project.

E. Benchmarking the Sub-Clause Modification

The guide for this standard considers that “This Sub-Clause affords the opportunity for the other party to refer such failure to arbitration for the purposes of obtaining an arbitration award that may be enforced internationally.” in case a party did not disputed Engineer's decision but failed to comply with it.

No further details are provided by the guide to the arbitral award in relation to the failure to comply with Engineer’s Decision.

F. Conclusion(s) about the Modification

As previously discussed, the modification being introduced would help in committing the parties to the periods stated within the Settlement of Disputes Clause since once an Engineer’s Decision is reached and a dissatisfaction notice is not issued within the allowable time frame, then the decision is to become enforceable.

Proposed Modification- Guideline(s) for this sub-Clause

Add at the end of sub-Clause 67.4 the following:

The arbitral award in relation to the failure to comply with Engineer's Decision shall be binding upon the Parties and shall not be subject to any appeal in any court.

5.17 Analysis of Major Modification Number 16

Standard Sub-Clause 69.1: Default of Employer

In the event of the Employer:

(a) failing to pay to the Contractor the amount due under any certificate of the Engineer within 28 days after the expiry of the time stated in Sub-Clause 60.10 within which payment is to be made, subject to any deduction that the Employer is entitled to make under the Contract, or

(b) interfering with or obstructing or refusing any required approval to the issue of any such certificate, or

(c) becoming bankrupt or, being a company, going into liquidation, other than for the purpose of a scheme of reconstruction or amalgamation, or

(d) giving notice to the Contractor that for unforeseen reasons, due to economic dislocation, it is impossible for him to continue to meet his contractual obligations

the Contractor shall be entitled to terminate his employment under the Contract by giving notice to the Employer, with a copy to the Engineer. Such termination shall take effect 14 days after the giving of the notice.

Modifications

The modifications being introduced to Sub-Clause 69.1 can be summarized in the following table:

<i>Modification Selection Criteria</i>	Sources							Total Adoption
	Organization 1	Organization 2	Organization 3	Organization 4	Organization 5	Organization 6	Organization 7	
Majority MRI = 3 (previously considered)	3	3	3	3	3	3	3	
<u><i>Modification Description</i></u>	<u><i>Organizations Adoption</i></u>							
Delete this sub-Clause		X	X	X			X	5
The Contactor accepts without submitting any Claim in case the Employer fails to perform part or the whole of his obligations.	X				X			2

From the above table, five of the seven organizations converged to deleting this sub-Clause in full. Accordingly, the modification being put into further analysis considers the same.

Modifications to be analyzed

Delete sub-Clause 69.1

A. Why the specific modification is being introduced?

The semi structured interview highlighted that the governing reasons behind the said modification can be summarized as follows:

- 1) To protect the Employer in case it fails to meet its timely payment obligations. In agreement, Responder O7 mentioned that “ it is believed that by deleting this sub-Clause the Employer is protected for timely payment delay”
- 2) To presumably allow the Employer to ensure the Work continues despite any such default.
- 3) As an indirect cause, to allow the Employer to gain leverage over the Contractor by utilizing a ‘privileged position’ to negotiate the settlement of demands by the Contractor such as claims or pricing of change orders...etc.

B. What are the implications of such modification?

The semi structured interview with all seven participants revealed that such modification is extremely detrimental to the relationship of the Parties and to the state of the Contract. The implications noted were enormous; they can be summarized in stages by:

- 1) During the Bidding stage:
 - a. Contractors bidding for the Works would lose trust in Employer.
 - b. Some qualified bidders will not accept such ‘privilege’ position of the Employer. Hence despite their suitable capability, they would decline from being part of the bidding process.
 - c. Develop concern in bidders over having to continue to perform and complete the Work in the absence of such fundamental stop-loss protection.
 - d. Attracts only Bidders that are willing to take such risk with an increased project cost. The increase in project cost as a result of the modifications can be averaged to be in the order of 5 % of the project cost.
 - e. May attract unqualified bidders that are likely to have problems of their own and need to engage in such a Contract despite such risk in order to alleviate their weak or unstable financial status, or technically unqualified status (ex: lack of previous experience).

- f. The clause will have to flow down to the Subcontracts. As a result, the same concerns will arise in the prospective Subcontractors' contracts.
- 2) During the Construction stage:
- a. The timely completion of the Work is in jeopardy. The 5% designated as cost increase is designated to finance the project in the even the Employer fails to secure prompt payments which may leave the works progress unaffected and the project completion time is not affected.
 - b. Contractor has to perform and complete the Work despite such important mechanism absence. Such state could not be sustained by any financially weak Contractor; thus the Work is likely to come to a halt if the Contractor is not capable to properly finance the works awaiting Employer's payment.
 - c. In the event of non-timely payment of the Employer, Contractor may end up suspending the Work in line with Sub-Clause 69.4 Contractor's Entitlement to Suspend Work.
- 3) During the Construction stage- Dispute Scenario
- a. The Contractor may end up declaring the non-timely payment default as a breach of the Contract. In such case, the Contractor may be able to terminate the Contract. Accordingly, Contractor's declaration of a breach will defeat the purpose of the elimination of the Clause in hope of protecting the Employer from termination by the Contractor.
 - b. Elimination of the Clause crates an unfair immunity to the Employer that is unlikely to be accepted under the Law when a dispute arises.
 - c. A dispute is likely to arise which will burden both parties until a verdict is reached thru whatever means of dispute resolution the parries have elected. Eventually, the default in Employer's payment is likely to be found ungrounded and the Employer ordered to pay the overdue entitlements to the Contractor and most probably with the accumulated interest.

C. What consequences of the modifications can be drawn?

The following do present the conclusions/ consequences that were drawn from the discussions with the seven organizations:

- 1) While the Employer is likely to believe that the removal of the default Clause provides it with the sought after protection, the elimination of such clause is unlikely to succeed in providing any additional protection to the Employer.

- 2) The Employer cannot ‘escape’ the obligation of timely payments to the Contractor. In such scenario the Contractor is likely to declare a breach of the Contract which will legitimate allow it to stop the performance.
- 3) The removal of this Clause is unwarranted, unjustified, and fails to benefit the Employer or the Project.

D. Any other proposition/ recommendation concerning the modifications being witnessed

As an obvious answer to this question, the participants, and through joint discussion, were convinced that the deletion of this sub-clause would not provide the needed immunity to the Employer but it will create an adverse situation of distrust between Contractors and Employer which is not favored in addition to an increase in project cost to cater for said risk. Therefore, the best recommendation that can be considered is by leaving the Clause intact to maintain the proper balance of risk allocation between the Parties.

E. Benchmarking the Sub-Clause Modification

As per the Guide to the use of this Standard Form as a guide to 69.1 Sub-Clause, “It should be emphasized that the termination of a contract is an important legal matter, and that, in addition to the terms of the Contract, the law governing the Contract should be examined to ascertain the effects thereof on the parties”. Therefore, the law plays an important role in controlling the termination causes criteria.

On a different note, as previously stated the elimination of this sub-clause is likely to be inadmissible under the Law; the Unfair Contract Terms Act 1977 as an example. Thus, the parties may risk finding out eventually that their Contract is void with a Contractor legitimately waiting to be paid against executed works.

F. Conclusion(s) about the Modification

As proven from the above analysis, this modification is unwarranted and serves no beneficial purpose but to the contrary; the same is adding additional complexity to the project with no benefit foreseen.

Proposed Modification- Guideline(s) for this sub-Clause

Leave the Clause in the Contract as per the original FIDIC fourth edition form wording.

5.18 Analysis of Major Modification Number 17

Standard Sub-Clause 70.1 Increase or Decrease of Cost

There shall be added to or deducted from the Contract such sums in respect of rise or fall in the cost of labour and/or materials or any other matters affecting the cost of the execution of the Works as may be determined in accordance with Part II of these Conditions.

Modifications

The modifications being introduced to Sub-Clause 70.1 can be summarized in the following table:

<i>Modification Selection Criteria</i>	Sources							Total Adoption
	Organization 1	Organization 2	Organization 3	Organization 4	Organization 5	Organization 6	Organization 7	
Majority MRI = 3 (previously considered)	3	3	3	3	3	3	3	
<u><i>Modification Description</i></u>	<u><i>Organizations Adoption</i></u>							
Delete and replace this Sub-Clause by fixing the Project Cost		X	X	X		X	X	5
Delete this Sub-Clause	X				X			2

From the above table, all seven organizations introduced major modification to this sub-Clause. Five of the seven organizations consider fixing the Contract Price. Accordingly, the modification being put into further analysis considers the same.

Modifications to be analyzed

Delete the text of sub-Clause 70.1 and substitute with the following:

The Contract Price shall not be subject to any adjustment in respect of rise or fall in the cost of labour, materials or any other matters affecting the cost of execution of the Contract.

A. Why the specific modification is being introduced?

The semi structured interview highlighted that the governing reason behind the said modification is to protect the Contract Price, the Employer, from the effect of outside

parameters such as labor rates, material and/or transportation costs. In agreement, Responder O3 mentioned that “Contract Price should not change”

B. What are the implications of such modification?

Throughout the semi structured interview the following impacts were recorded:

1. No implications are expected if the duration is relatively short (a year) with respect to the risk of fluctuation in market costs during the period of the Contract. Such relativity depends on the risks of the volatility of the market during the execution of the Works.
2. In this study whereby three years project duration is considered, the average impact on project cost is around one percent 1.00 % increase in the tender price.
3. From a duration perspective, the impact on project duration is null since such modification will not affect the project execution time.

C. What consequences of the modifications can be drawn?

The semi-structured interview revealed that in case of delays that cause the Time of the Contract to stretch beyond the original contract duration, it is likely that this modification attracts the risk of claim for alteration in costs that the Contractor could not have foreseen. Therefore while the parties have agreed on “*any other matters affecting the cost of execution of the Contract*” there remains the potential of a claim in case of a delay that is outside the control of the Contractor. Such claim may be argued by the Contractor to be exempt from the provision of this modification.

The semi-structured interview highlighted that this modification is common and accepted modification in the industry by Contractors. However, there remains the risk of dispute in cases of time extensions that are argues to be due by the Employer.

D. Any other proposition/ recommendation concerning the modifications being witnessed

The semi-structured interview shed light on the dispute that might arise due to the extension of time in relation to this sub-clause. Accordingly, such risk needs to be alleviated while introducing this modification.

E. Benchmarking the Sub-Clause Modification

The Guide to the use of this Standard Form in relation to 70.1 Sub-Clause considers this modification as accepted in the industry and is found as an alternative to the original clause; for instance the guide considers:

“Delete the text of the Sub-Clause and substitute:

Subject to Sub-Clause 70.2 the Contract Price shall not be subject to any adjustment in price in respect of rise or fall in the cost of labour, materials or any other matters affecting the cost of execution of the Contract.”

F. Conclusion(s) about the Modification

As proven from the above analysis, it is recommended to alter the modification by adding a time factor that allows the Contractor to claim for increased costs that are due to delays which are beyond his control once an agreed period has elapsed. Such terminology would alleviate the dispute risk arising in relation to this sub-clause as a result of an extension of time. Also, provide a buffering period for the project original duration if exceeded.

Proposed Modification- Guideline(s) for this sub-Clause

Delete the text of sub-Clause 70.1 and substitute with the following:

The Contract Price shall not be subject to any adjustment in respect of rise or fall in the cost of labour, materials or any other matters affecting the cost of execution of the Contract including a period of 6 months beyond the Time of Completion. The Employer shall not be liable for any fluctuation in the exchange rate of any currency during the total of such period. The Contract Price shall not be subject to any adjustment after the end of this six months period if the extension of time is due to delays by the Contractor.

5.19 Analysis of Major Modification Number 18

Standard Sub-Clause 70.2 Subsequent Legislation

If, after the date 28 days prior to the latest date for submission of tenders for the Contract there occur in the country in which the Works are being or are to be executed changes to any National or State Statute, Ordinance, Decree or other Law or any regulation or bye-law of any local or other duly constituted authority, or the introduction of any such State Statute, Ordinance, Decree, Law, regulation or bye-law which causes additional or reduced cost to the Contractor, other than under Sub-Clause 70.1, in the execution of the Contract, such additional or reduced cost shall, after due consultation with the Employer and the Contractor, be determined by the Engineer and shall be added to or deducted from the Contract Price and the Engineer shall notify the Contractor accordingly, with a copy to the Employer.

Modifications

The modifications being introduced to Sub-Clause 70.2 can be summarized in the following table:

<i>Modification Selection Criteria</i>	Sources							Total Adoption
	Organization 1	Organization 2	Organization 3	Organization 4	Organization 5	Organization 6	Organization 7	
Majority MRI = 3 (previously considered)	3	3	3	3	3	3	3	
<i><u>Modification Description</u></i>	<i><u>Organizations Adoption</u></i>							
Delete and replace this Sub-Clause by fixing the Project Cost		X	X	X		X	X	5
Delete this Sub-Clause	X				X			2

From the above table, all seven organizations introduced major modification to this sub-Clause. Five of the seven organizations consider fixing the Contract Price. Accordingly, the modification being put into further analysis considers the same.

Modifications to be analyzed

Delete the text of sub-Clause 70.2 and substitute with the following:

The Contract Price shall not be subject to any adjustment in respect of rise or fall in the cost of labour, materials or any other matters affecting the cost of execution of the Contract. The Employer shall not be liable for any fluctuation in the exchange rate

of any currency. The Employer shall not be liable for any fluctuation in the exchange rate of any currency.

A. Why the specific modification is being introduced?

The semi structured interview highlighted that the governing reason behind the said modification is to ensure that the Employer is absolved from any events and contractual grounds that may impact the Contract Price. In agreement, Responder O3 recorded that “Contract Price should not change”

B. What are the implications of such modification?

Throughout the semi structured interviews the following impacts were recorded:

- The Contactor is unable to foresee the risk of cost increases that may transpire during the Contract period when such clause is deleted such as under this modification. A Price adjustment may indeed be required due to new government regulations that may, as an example, prohibit the importation of labor from certain country which would in turn force the Contractor to look somewhere else such as in other more expensive choices.
- A Price adjustment may also arise as a result of the increase in visa fees imposed by the government or the fees for work permits.
- Contractor would aim to recover his loss thru increasing his prices on Variations.
- Contractor may employ cheaper labor or lower cost material to absorb his higher expenses, thus impacting the efficiency and the quality of the Works.
- Contractor reduces the number of labor resources to cover for the increased costs and use the common excuse “unavailability of labor in the market”. This act will in turn impact the Finish date of the Works.
- Contractor declares insolvency as a result of the excessive price adjustment that he is unable to bear.
- Or simply, to circumvent the impact of such modification risk, the Contractor will increase his bid price along with the rest of the bidders to ensure that such risk is covered for. The recorded average impact on project cost from the seven organizations is around one percent 1.00 % increase in the tender price. Hence, the Employer will end up paying a higher price that may have been unnecessary since the regulation or price increases never transpired during the execution of the Works. In other words, bidders are likely to include this risk in their bid price, thus transferring the consequence of the cost increase onto the Employer despite that such increase

may never transpire during the Contract period. This means that the modification may cause an additional cost to the Employer that would not have arisen had the original clause been left intact.

C. What consequences of the modifications can be drawn?

In addition to the above cost impact, the main conclusion reached about this modification as a result from the semi-structured interviews is that this modification is a source of claim since a Contractor may claim for a price adjustment noting the peculiarity of the regulation which the Contractor may argue that it could not have been foreseen even after agreeing to such term. Hence, Contractor argues that the price adjustment applies under sub-clause 53.1 *'Notwithstanding any other provision of the Contract...'* and therefore the effect of sub-clause. 70.2 may not override the provision of sub-clause 53.1. Therefore, the Contractor would submit a claim anyway for his unforeseen increased costs.

D. Any other proposition/ recommendation concerning the modifications being witnessed

The semi-structured interviews resulted in recommending to maintain the provision that allows the Contractor or yet the Employer to revisit the Contract Price. A case in point is if the material market cost is reduced as a result of say reduced oil prices which would allow the Employer to request the Engineer to provide his determination in this regard which may in turn result in a downward Price adjustment. Therefore, deleting such provision can deprive the Employer from claiming for such reduction.

E. Benchmarking the Sub-Clause Modification

The Guide to the use of this Standard Form in relation to Sub-Clause 70.2 considers that “ If contractors do not have to allow for price variations when preparing their tenders, the Employer will receive better and more competitive offers from reputable contractors, and will only have to meet such net variations in cost as actually occur”. Hence the introduction of this modification does not allow for competitive offers, and impose an additional cost to the Employer that could be avoided given no change in Subsequent Legislation.

F. Conclusion(s) about the Modification

As proven from the above analysis, this modification is not recommended as it transfers an unmanageable risk onto the Contractor which the Contractor will try to resist and escape in the ways mentioned in the previous section.

Proposed Modification- Guideline(s) for this sub-Clause

Leave the Clause in the Contract as per the original FIDIC fourth edition form wording.

5.20 Analysis of Major Modification Number 19

Standard Sub-Clause 71.1 Currency Restrictions

If, after the date 28 days prior to the latest date for submission of tenders for the Contract, the Government or authorised agency of the Government of the country in which the Works are being or are to be executed imposes currency restrictions and/or transfer of currency restrictions in relation to the currency or currencies in which the Contract Price is to be said, the Employer shall reimburse any loss or damage to the Contractor arising therefrom, without prejudice to the right of the Contractor to exercise any other rights or remedies to which he is entitled in such event.

Modifications

The modifications being introduced to Sub-Clause 71.1 can be summarized in the following table:

<i>Modification Selection Criteria</i>	Sources							Total Adoption
	Organization 1	Organization 2	Organization 3	Organization 4	Organization 5	Organization 6	Organization 7	
Majority MRI = 3 (previously considered)	3	3	3	3	3	3	3	
<u><i>Modification Description</i></u>	<u><i>Organizations Adoption</i></u>							
Delete this Sub-Clause	X	X	X	X	X	X	X	7

From the above table, all seven organizations considered deleting this sub-Clause. Accordingly, the modification being put into further analysis considers the same.

Modifications to be analyzed

Delete sub-Clause 71.1

A. Why the specific modification is being introduced?

The semi structured interview highlighted that the governing reason behind the said modification is to shield the Employer from any increases in the Contract Price as a result of unforeseen acts by the Government which may alter the methodology of cash flow to the Contractor. Confirming this, Responder O6 recorded that “Contract Price should remain unchanged despite of any currency restrictions”

B. What are the implications of such modification?

Throughout the semi structured interviews the following impacts were recorded:

- An international Contactor may be unable to transfer funds to or from his home country.
- An international Contractor may be unable to transfer advance money to mobilize to Site.
- Cash flow to the Contractor in the currency agreed will be interrupted, thus leading to deprivation of the Contractor from ability to provide interim funding to the Project which in turn may cause interruption or complete stoppage of the Works.
- The said modification has minimal impact on the project since most of the bids do include local contractors and consider the local countries' currencies.

C. What consequences of the modifications can be drawn?

As highlighted within the semi structured interviews, this modification is detrimental to the Contractor's finances which may lead to complete stoppage of the Work in case and international contractor is on board.

D. Any other proposition/ recommendation concerning the modifications being witnessed

The semi-structured interviews discussions revealed the minimal impact of this modification on the project noting the locality of the Contractors. But, since this modification leaves the Currency Restrictions risk unmanaged, the original wording is advantageous to that respect.

E. Benchmarking the Sub-Clause Modification

The Guide to the use of this Standard Form in relation to Sub-Clause 71.1 considers that “ this Clause protects the Contractor against currency restrictions and/or transfer of currency restrictions in relation to the currencies in which the Contract Price is to be paid”. And “If such restrictions are imposed after the Contractor will normally have priced his tender, the Contractor is entitled to be reimbursed by the Employer for any consequent loss or damage.” The being considered modification is not standard in this standard form.

F. Conclusion(s) about the Modification

As proven from the above analysis, this modification is not recommended since it risks stopping the project related works in case Currency Restrictions become applicable in the presence of an international contractor.

Proposed Modification- Guideline(s) for this sub-Clause

Leave the Clause in the Contract as per the original FIDIC fourth edition form wording.

5.21 Analysis of Major Modification Number 20

Standard Sub-Clause 72.1 Rates of Exchange

Where the Contract provides for payment in whole or in part to be made to the Contractor in foreign currency or currencies, such payment shall not be subject to variations in the rate or rates of exchange between such specified foreign currency or currencies and the currency of the country in which the Works are to be executed.

Modifications

The modifications being introduced to Sub-Clause 72.1 can be summarized in the following table:

<i>Modification Selection Criteria</i>	Sources							Total Adoption
	Organization 1	Organization 2	Organization 3	Organization 4	Organization 5	Organization 6	Organization 7	
Majority MRI = 3 (previously considered)	3	3	3	3	3	3	3	
<u><i>Modification Description</i></u>	<u><i>Organizations Adoption</i></u>							
Delete this Sub-Clause	X	X	X	X	X	X	X	7

From the above table, all seven organizations considered deleting this sub-Clause. Accordingly, the modification being put into further analysis considers the same.

Modifications to be analyzed

Delete sub-Clause 72.1

A. Why the specific modification is being introduced?

The semi structured interview highlighted that the governing reason behind the said modification is to deal with the idea of variation in currency exchange rate on a case by case issue.

B. What are the implications of such modification?

Throughout the semi structured interviews it was recorded that the impact is minimal to none, provided that the agreed currency is based on hard currency which is deemed reasonably stable in its variations which was recorded to be always the case. Accordingly, the average time impact on the project is null and the average cost impact is also null.

C. What consequences of the modifications can be drawn?

As highlighted within the semi structured interviews, this modification is not deemed to impact negatively the Contract. The elimination of “*shall not be subject to variations*” allows for flexibility in dealing with rates of exchange fluctuation which may not be applicable given the limited fluctuation of the leading international currency being the USD.

D. Any other proposition/ recommendation concerning the modifications being witnessed

Throughout the semi-structured interviews discussions, it was recommended that the parties may agree to set a limit as to how much the gap can be between the original exchange rate and the eventual one. Upon reaching such limit, the parties may agree to share the losses or gains as applicable. But agreeing on the said limit may not be a straight forward process.

Another default recommendation was to keep the original wording of this sub-clause as is, since the same would ensure commitment of the Contractor to the rates he specified while submitting his bid which did form part of the contract.

E. Benchmarking the Sub-Clause Modification

The Guide to the use of this Standard Form in relation to Sub-Clause 72.1 considers that “In a unit rate contract, this would normally require that each and every item to be paid for is quoted in one or more foreign currencies in addition to the local currency. Such an arrangement gives a complicated Bill of Quantities but ensures that the Contractor receives the appropriate currencies”. Hence, the Contractor is to receive payments of some items at the currencies specified regardless of any fluctuation. The same is considered to be fair and need be acceptable by any Contractor.

F. Conclusion(s) about the Modification

As recorded from the above analysis, this modification has null impact on the project since most of the being concluded contracts are referred to the leading international currency, USD, which fluctuation is very limited. Therefore, keeping the original wording or deleting it has the same impact on the project.

Proposed Modification- Guideline(s) for this sub-Clause

Leave the Clause in the Contract as per the original FIDIC fourth edition form wording.

5.22 Analysis of Major Modification Number 21

Standard Sub-Clause 72.2 Currency Proportions

Where the Employer has required the Tender to be expressed in a single currency but with payment to be made in more than one currency and the Contractor has stated the proportions or amounts of other currency or currencies in which he requires payment to be made, the rate or rates of exchange applicable for calculating the payment of such proportions or amounts shall, unless otherwise stated in Part II of these Conditions, be those prevailing, as determined by the Central Bank of the country in which the Works are to be executed, on the date 28 days prior to the latest date for the submission of tenders for the Contract, as has been notified to the Contractor by the Employer prior to the submission of tenders or as provided for in the Tender.

Modifications

Delete sub-Clause 72.2

Modifications

The modifications being introduced to Sub-Clause 72.2 can be summarized in the following table:

<i>Modification Selection Criteria</i>	Sources							Total Adoption
	Organization 1	Organization 2	Organization 3	Organization 4	Organization 5	Organization 6	Organization 7	
Majority MRI = 3 (previously considered)	3	3	3	3	3	3	3	
<u><i>Modification Description</i></u>	<u><i>Organizations Adoption</i></u>							
Delete this Sub-Clause	X	X	X	X	X	X	X	7

From the above table, all seven organizations considered deleting this sub-Clause. Accordingly, the modification being put into further analysis considers the same.

Modifications to be analyzed

Delete sub-Clause 72.2

A. Why the specific modification is being introduced?

The semi structured interview highlighted that the governing reason behind the said modification is to shield the Employer from any price adjustment that may transpire as a result of the original clause.

B. What are the implications of such modification?

Through the semi structured interviews it was recorded that the given modification may cause misinterpretation between the parties as to how to pay the opted currency of the Contractor, i.e. based on which exchange rate. While the original clause specifies the exchange rate, the deletion of this clause leaves a void that leaves the Parties confused about what to utilize as basis of the exchange rate especially since a lot of items needs to be imported from international markets within the project life span.

Given the above, the average time impact of the modification on the project is null but the average cost impact was found to be 2% increase in the project price.

C. What consequences of the modifications can be drawn?

As highlighted within the semi structured interviews, the Parties will resort to a common renowned source for such rate but it is the Contract that should set such basis from the onset rather than leaving such issue to be determined afterwards. Accordingly this modification may lead to Claim and Dispute.

D. Any other proposition/ recommendation concerning the modifications being witnessed

Through the semi-structured interviews discussions, it is recommended to fix the exchange rate in the Special Section Part II or to set a basis about how to address its fluctuation.

Another proposition was to purchase products from international markets at the early stages but the same was proven to be non-practical.

E. Benchmarking the Sub-Clause Modification

The Guide to the use of this Standard Form in relation to Sub-Clause 72.2 considers details about the “rate or rates of exchange” and recommends that if it “shall be established from a source other than the Central Bank of the country, it may be appropriate to make the following variation to the Sub-Clause in Part II”. Accordingly, this modification of deleting this sub-clause in full is not part of the Guide recommendation.

F. Conclusion(s) about the Modification

As proven from the above analysis, this modification can be a source of claims and dispute in the absence of the needed mechanism for currency adjustments. The same did also impact the project price.

Proposed Modification- Guideline(s) for this sub-Clause

Leave the Clause in the Contract as per the original FIDIC fourth edition form wording.

5.23 Analysis of Major Modification Number 22

Standard Sub-Clause 72.3 Currencies of Payment for Provisional Sums

Where the Contract provides for payment in more than one currency, the proportions or amounts to be paid in foreign currencies in respect of Provisional Sums shall be determined in accordance with the principles set forth in Sub-Clause 72.1 and 72.2 as and when these sums are utilised in whole or in part in accordance with the provisions of Clauses 58 and 59.

Modifications

Delete sub-Clause 72.3

Modifications

The modifications being introduced to Sub-Clause 72.3 can be summarized in the following table:

<i>Modification Selection Criteria</i>	Sources							Total Adoption
	Organization 1	Organization 2	Organization 3	Organization 4	Organization 5	Organization 6	Organization 7	
Majority MRI = 3 (previously considered)	3	3	3	3	3	3	3	
<u><i>Modification Description</i></u>	<u><i>Organizations Adoption</i></u>							
Delete this Sub-Clause	X	X	X	X	X	X	X	7

From the above table, all seven organizations considered deleting this sub-Clause. Accordingly, the modification being put into further analysis considers the same.

Modifications to be analyzed

Delete sub-Clause 72.3

A. Why the specific modification is being introduced?

The semi structured interview highlighted that the governing reason behind the said modification is to shield the Employer from any price adjustment that may transpire as a result of the original clause.

B. What are the implications of such modification?

The semi-structured interviews recorded that the given modification may cause confusion about the mechanism to be adopted while paying for provisional sum items in foreign currencies.

Given the above, the average time impact of the modification on the project was found to be null but the average cost impact was found to be 1% increase in the project price.

C. What consequences of the modifications can be drawn?

As highlighted within the semi structured interviews, the Parties will resort to “common practice” in paying for in foreign currencies in respect of Provisional Sums while the Contract should set the basis of this rather than leaving such issue to be determined afterwards. Accordingly this modification may lead to Claim and Dispute.

D. Any other proposition/ recommendation concerning the modifications being witnessed

Through the semi-structured interviews discussions it was noted that as long as the rates of the provisional sum items are expressed and paid in foreign currencies the same should not be a source for problems to both parties since the same represents what has been agreed about during the contract signature.

Another proposition was to purchase products from international markets at the early stages of the project but the same was proven to be non-practical.

E. Benchmarking the Sub-Clause Modification

The Guide to the use of this Standard Form in relation to Sub-Clause 72.3 “emphasises the need to deal separately and individually with the currency content of Provisional Sums as and when they are used”; deleting this sub-clause in full is not part of the Guide recommendation.

F. Conclusion(s) about the Modification

As proven from the above analysis, this modification can be a source of claims and dispute in the absence of the needed mechanism for currency payment for Provisional Sums. The same did also impact the project price.

Proposed Modification- Guideline(s) for this sub-Clause

Leave the Clause in the Contract as per the original FIDIC fourth edition form wording.

5.24 Modifications Impacts

Phase IV of this study considers two data collection techniques being semi-structured interviews and the Questionnaire surveys. In the previous sections of this chapter semi-structured interviews were addressed in order to understand the reasons, implications and consequences of the large modifications that were introduced to a specific sub-clause. The Questionnaire surveys that were put along the semi-structured interviews provided the needed impact in terms of project duration related impact and project related Cost impact.

5.24.1 Project Duration Related Impact

As previously specified, all seven participants were addressed given the same assumption of typical project duration of three years. Accordingly, the project duration related impact was assessed given the said assumption. Detailed presentation of the findings in relation to the modification impact on project duration on a Sub-Clause basis is being presented in Table 13.

Table 13: Project Duration Related Impact

	Sources							<i>Average Project Duration Related Impact (months)</i>
	Organization 1	Organization 2	Organization 3	Organization 4	Organization 5	Organization 6	Organization 7	
<i>PART I - GENERAL CONDITIONS of CONTRACT</i>								
<i>General Obligations</i>								
8.1 Contractor's General Responsibilities	0	0	1	2	3	4	4	2
10.3 Claims under Performance Security	0	0	0	0	0	0	0	0
12.1 Sufficiency of Tender	2	1	1	2	4	2	2	2
14.1 Programme to be Submitted	6	2	5	3	1	6	5	4
14.3 Cash Flow Estimate to be Submitted	0	0	0	0	0	0	0	0
<i>Commencement and Delays</i>								
47.1 Liquidated Damages for Delay	0	0	2	1	2	1	1	1
47.2 Reduction of Liquidated Damages	0	0	2	1	2	1	1	1
<i>Alterations, Additions and Omissions</i>								
51.2 Instructions for Variations	5	1	4	1	3	3	4	3
52.3 Variations Exceeding 15 per cent	0	0	0	0	0	0	0	0
<i>Measurement</i>								

55.1 Quantities	0	0	0	0	0	0	0	0
56.1 Method of Measurement	0	0	0	0	0	0	0	0
<i>Settlement of Disputes</i>								
67.1 Engineer's Decision	0.5	1	1	0.5	0	0	0.5	0.5
67.2 Amicable Settlement	1	0.5	1	0	0.5	0	0.5	0.5
67.3 Arbitration	0.5	0	1	0.5	1	0.5	0	0.5
67.4 Failure to Comply with Engineer's Decision	0	0	0	0	0	0	0	0
<i>Default of Employer</i>								
69.1 Default of Employer	0	0	0	0	0	0	0	0
<i>Changes in Cost and Legislation</i>								
70.1 Increase or Decrease of Cost	0	0	0	0	0	0	0	0
70.2 Subsequent Legislation	0	0	0	0	0	0	0	0
<i>Currency and Rates of Exchange</i>								
71.1 Currency Restrictions	0	0	0	0	0	0	0	0
72.1 Rates of Exchange	0	0	0	0	0	0	0	0
72.2 Currency Proportions	0	0	0	0	0	0	0	0
72.3 Currencies of Payment for Provisional Sums	0	0	0	0	0	0	0	0
<i>Total Duration</i>								14.5

As can be seen, the impact of major modifications in relation to project duration cannot be ignored since an additional 14.5 months out of 36 months (being ~40%) of the project original duration is indeed major.

5.24.2 Project Cost Related Impact

As previously highlighted, all seven participants were addressed given the same assumption of typical project cost being 100%. Accordingly, the project cost related impact was assessed given the said assumption. Detailed presentation of the findings in relation to the modification impact on project cost on a Sub-Clause basis is being presented in Table 14.

Table 14: Project Cost Related Impact

	Sources							
	Organization 1	Organization 2	Organization 3	Organization 4	Organization 5	Organization 6	Organization 7	Average Project Cost Related Impact (%)
PART I - GENERAL CONDITIONS of CONTRACT								
General Obligations								

8.1 Contractor's General Responsibilities	0	0	4	3	3	2	2	2%
10.3 Claims under Performance Security	15	13	4	10	11	7	10	10%
12.1 Sufficiency of Tender	0	0	0	0	0	0	0	0%
14.1 Programme to be Submitted	7	20	11	27	10	13	3	13%
14.3 Cash Flow Estimate to be Submitted	0	0	0	0	0	0	0	0%
<i>Commencement and Delays</i>								
47.1 Liquidated Damages for Delay	1	2	6	6	5	5	3	4%
47.2 Reduction of Liquidated Damages	1	2	5	5	3	6	5	4%
<i>Alterations, Additions and Omissions</i>								
51.2 Instructions for Variations	4	1	6	5	5	3	4	4%
52.3 Variations Exceeding 15 per cent	4	3	1	5	4	1	3	3%
<i>Measurement</i>								
55.1 Quantities	2	3	3	1	1	3	1	2%
56.1 Method of Measurement	0	0	0	0	0	0	0	0%
<i>Settlement of Disputes</i>								
67.1 Engineer's Decision	1	2	3	1	2	3	2	2%
67.2 Amicable Settlement	0	0	0	0	0	0	0	0%
67.3 Arbitration	1	0	1	2	1	2	0	1%
67.4 Failure to Comply with Engineer's Decision	0	0	0	0	0	0	0	0%
<i>Default of Employer</i>								
69.1 Default of Employer	4	4	8	5	5	6	3	5%
<i>Changes in Cost and Legislation</i>								
70.1 Increase or Decrease of Cost	1	1	0	2	2	0	1	1%
70.2 Subsequent Legislation	1	2	0	1	2	0	1	1%
<i>Currency and Rates of Exchange</i>								
71.1 Currency Restrictions	0	0	0	0	0	0	0	0%
72.1 Rates of Exchange	0	0	0	0	0	0	0	0%
72.2 Currency Proportions	0	4	1	3	2	1	3	2%
72.3 Currencies of Payment for Provisional Sums	0	2	0	1	1	0	3	1%
<i>Total Cost</i>								55%

As can be seen, the impact of major modifications in relation to project cost is important and cannot be ignored since such modifications yield 55% increase above the project original targeted cost or budget.

5.24.3. Modifications Impact Conclusions

The above two sections showed that the impact of the major modification to sub-clauses is around 40% from a time perspective and another 55% from a cost one. Hence, and from a cost perspective, project financing and budgeting need to be revisited since such high impact to the project would mandate even full rethink of the project existence concept.

From a time perspective, 40% increase in project duration would recommend certainly to revise the construction sequence that would be adopted for the project.

Since the impact of the introduction of the said major modification was proven to be considerable and if the contractors failed in properly assessing the impact of the said modifications, such major modifications would trigger a claiming environment within the project to balance for the improper assessment of the modification which may be aggravated to disputes. This is in line with what was highlighted in the first chapter of this research that disputes do relate to contractual factors such as contract interpretation, misunderstandings, inadequate contract drafting, variation to scope, administration, contract terms..... Etc.

From a different angle, and given the considerable impact (55% + 40%) that the major modifications have on the project, the same may present a sort of validation about what was addressed by EC Harris concerning the fact that the construction disputes in the Middle East are more than double the global average, which was mentioned to be linked to the failure to comply with the parties own contractual obligations.

5.25. Proposed Modifications- Guideline(s) Validation

As previously indicated in the research methodology chapter, the same seven organizations that participated in the semi-structured interviews and provided their input in relation to the impacts of the witnessed major modification were further addressed to seek their input in relation to the Proposed Modifications Guideline(s) for each sub-Clause. The respondents were inquired about the possible impact the Proposed Modifications could have in terms of time and cost in months and % increase to the overall cost of the project respectively. The feedback received is found in tables 15 and 16 below.

Table 15: Proposed Modification- Project Duration Related Impact

	Sources							Average Project Duration Impact (months)
	Organization 1	Organization 2	Organization 3	Organization 4	Organization 5	Organization 6	Organization 7	
PART I - GENERAL CONDITIONS of CONTRACT								
General Obligations								
8.1 Contractor's General Responsibilities	0	0	0.5	0	0.5	0	0.5	0.21
10.3 Claims under Performance Security	0	0	0	0	0	0	0	0
12.1 Sufficiency of Tender	2	1	1	2	4	2	2	2
14.1 Programme to be Submitted	1	0	0.5	0	1	0.5	0.5	0.5
14.3 Cash Flow Estimate to be Submitted	0	0	0	0	0	0	0	0
Commencement and Delays								
47.1 Liquidated Damages for Delay	0	0	0	0	0	0	0	0
47.2 Reduction of Liquidated Damages	0	0	0	0	0	0	0	0
Alterations, Additions and Omissions								
51.2 Instructions for Variations	0	0	0	0	0	0	0	0
52.3 Variations Exceeding 15 per cent	0	0	0	0	0	0	0	0
Measurement								
55.1 Quantities	0	0	0	0	0	0	0	0
56.1 Method of Measurement	0	0	0	0	0	0	0	0
Settlement of Disputes								
67.1 Engineer's Decision	0	0.5	0	0.5	0	0.5	0	0.21
67.2 Amicable Settlement	0	0	0.5	0	0	0	0.5	0.14
67.3 Arbitration	0	0	0.5	0	0.5	0	0.5	0.21
67.4 Failure to Comply with Engineer's Decision	0	0	0	0	0	0	0	0
Default of Employer								
69.1 Default of Employer	0	0	0	0	0	0	0	0
Changes in Cost and Legislation								
70.1 Increase or Decrease of Cost	0	0	0	0	0	0	0	0
70.2 Subsequent Legislation	0	0	0	0	0	0	0	0
Currency and Rates of Exchange								
71.1 Currency Restrictions	0	0	0	0	0	0	0	0
72.1 Rates of Exchange	0	0	0	0	0	0	0	0
72.2 Currency Proportions	0	0	0	0	0	0	0	0
72.3 Currencies of Payment for Provisional Sums	0	0	0	0	0	0	0	0
Total Duration								3.27

Table 16: Proposed Modification- Project Cost Related Impact

	Sources							Average Project Cost Impact (%)
	Organization 1	Organization 2	Organization 3	Organization 4	Organization 5	Organization 6	Organization 7	
PART I - GENERAL CONDITIONS of CONTRACT								
General Obligations								
8.1 Contractor's General Responsibilities	0	0	0.5	0	0.5	0	0	0.143%
10.3 Claims under Performance Security	0	0	0	0	0	0	0	0%
12.1 Sufficiency of Tender	0	0	0	0	0	0	0	0%
14.1 Programme to be Submitted	0	1	1	1	0	1	0	0.571%
14.3 Cash Flow Estimate to be Submitted	0	0	0	0	0	0	0	0%
Commencement and Delays								
47.1 Liquidated Damages for Delay	0	0	1	1	0	0	0	0.286%
47.2 Reduction of Liquidated Damages	0	0	0	0	0	1	0	0.143%
Alterations, Additions and Omissions								
51.2 Instructions for Variations	0	0	1	0	1	0	0	0.143%
52.3 Variations Exceeding 15 per cent	0	0	0	1	0	0	0	0.143%
Measurement								
55.1 Quantities	0	1	0	0	0	0	0	0.143%
56.1 Method of Measurement	0	0	0	0	0	0	0	0%
Settlement of Disputes								
67.1 Engineer's Decision	0	0	1	0	0	0	0	0.143%
67.2 Amicable Settlement	0	0	0	0	0	0	0	0%
67.3 Arbitration	0	0	0	0	0	0	0	0%
67.4 Failure to Comply with Engineer's Decision	0	0	0	0	0	0	0	0%
Default of Employer								
69.1 Default of Employer	1	0	0	0	0	0	0	0.143%
Changes in Cost and Legislation								
70.1 Increase or Decrease of Cost	0	0	0	0	0	0	0	0%
70.2 Subsequent Legislation	0	0	0	0	0	0	0	0%
Currency and Rates of Exchange								
71.1 Currency Restrictions	0	0	0	0	0	0	0	0%
72.1 Rates of Exchange	0	0	0	0	0	0	0	0%
72.2 Currency Proportions	0	0	0	0	0	0	0	0%
72.3 Currencies of Payment for Provisional Sums	0	0	0	0	0	0	0	0%
Total Cost								1.857%

Table 15 showed that the proposed modifications reduced the impact on project duration from the 14.5 months (refer Table 13) to 3.27 months which is considerable.

Table 16 showed that the proposed modifications reduced the impact on project cost from the 55% (refer table 14) to ~2% of project cost which is also considerable, indeed negligible.

As per literature, it was noted that the original wording of standard sub-clauses represent an impartial starting points to contracting parties, Standard forms do present “an impartial starting point from which the parties can negotiate from” (Shnookal, 2010, p11), the same was practically proven since once the major modifications to standard conditions were removed, the impact that was obtained in relation to the same did die out.

Also regarding project performance, the Iron Triangle that was described by Oilsen (1971) which was built on cost, time and Quality and was proven to be still valid should indicate major improvement; the same is attributed to the fact that the impact on project cost and project time are significantly decreased. Also, this study confirm what was considered by Dissanayaka & Kumaraswamy (1999) that formulation of a good contract document is identified to be a one of the most important factors to project success.

5.26. Experts Views

The study captures the influence the modifications made to the conditions of contract can have on the project success in terms of time and cost overrun. Although the figures provided by the seven participants are varying in range, the organizations seem to converge in opinion concerning significant modifications influence. Given the varying range of figures provided by the Organizations, the combined figure of the seven organizations helps give an indication. Moreover the overall improvement for the cost and time impact confirmed the importance of adopting more disciplined practice.

It identifies the clauses that have more critical amendments applied to in the market and the impact of these modifications. It also provides a comprehensive recommendation on the problematic clauses that helps the modifications be an enhancement tool rather than an impediment to project success. Such recommendation is built on sound grounds, such grounds being it FIDIC modifications or best practice.

The guidelines to the introduction of modifications surely help toward achieving clear and balanced contract. It will even have an influence on the resolution and even the avoidance of costly claims. However, such results will only be achieved if both parties to the contract adopt this philosophy and act professional and in good faith throughout. If they can agree

detailed rules to address, measure and value most typical eventualities under a contract, this can have a positive outcome.

5.26. Summary

In this chapter, each modification was investigated by understanding the modifications circumstances; the purpose of the modifications and the corresponding impact and consequences. A conclusion(s) about the said modification was discussed and withdrawn. The last sections in this chapter were dedicated to recommendations validation. The upcoming last chapter provided general conclusion about what was achieved.

CHAPTER 6
RESEARCH CONCLUSIONS

CHAPTER 6 - RESEARCH CONCLUSIONS

6.1 Introduction

In the previous chapter, the impact of the largely modified sub-clauses (MRI-3) was examined by considering the reason governing the introduction of each modification, the implication of such modifications and the conclusions and consequences that resulted from the given modification. Upon understanding all aspects of each modification, recommendations were formulated. The last part of the previous chapter presented a validation to the presented recommendations.

This chapter starts by presenting a section showing details in relation to meeting the research aim and objectives. The last two sections of this research are dedicated to research limitations and future research.

6.2. Meeting the Research Aim and Objectives

The initial research aim was met since the modifications introduced to the Standard Conditions of Contract form to improve the construction management performance were put into investigation. Also, the same was further validated first by obtaining two experts' reviews and then through the feedback from the case study participants.

Each of the following objectives set in Chapter 1 were met. They are re-listed below:

Objective 1: To review the main families of international Standard Forms of Contracts that exist in relation to the construction industry or any other contractual form. 10 families were identified, which include:

- The American Institute of Architects (AIA)
- Fédération Internationale des Ingénieurs-Conseils (FIDIC)
- The Joint Contracts Tribunal (JCT)
- Institution of Civil Engineers (ICE)
- The New Engineering Contract (NEC)
- Institution of Engineering and Technology (IET)
- The Association of Consultant Architects (ACA)
- BE Collaborative Contract
- ConsensusDOCS Contracts
- International Chamber of Commerce (ICC)

Objective 2: To review and identify which family of international Standard Forms of Contract is most commonly used in the Middle East region. The FIDIC family was identified.

Objective 3: To review and identify the most commonly used Standard Form of Contract within that specific contract family identified in step 2. The Red Book Fourth edition was found to be the most commonly used form.

Objective 4: To examine the extent of alteration to contractual clauses and sub-clauses within the identified Standard Form. The said ranking was accomplished using Modification Ranking Indicator (MRI). MRI ranged between One, Two and Three, where One was not modified and three was largely modified. The analysis showed that 79% of the 194 standard clauses were not modified, 10% had an MRI=2, and 11% an MRI =3.

Objective 5: To investigate the governing reasons that mandated the introduction of the modifications. Several reasons were discussed. For instance, the reasons governing the same ranges from trying to protect the Employer in so many different ways by deleting clauses entirely, or drastically changing the responsibility allocation for a specific clause, to trying to improve the performance of the contractor. The same was thoroughly considered in this research.

Objective 6: To investigate the impact of modifications of standard conditions of contracts towards performance in the construction industry. This research highlighted that the impact of the said modification can be divided into cost related impacts and time related impacts. Some modifications did impact the project duration, for instance the project duration may increase by 40% given the said modifications. Also, modifications may have a major impact on the project cost, which may be expected to escalate by up to 55%.

Objective 7: Make recommendation in relation to the modifications being witnessed to be used by various industry stakeholders. The proposed modifications and subsequent recommendations to sub-clauses as analyzed in the previous chapter are summarized in this section and are as follows:

Sub-Clause 8.1: Contractor's General Responsibility

Proposed Modification

Add the following paragraph at the end of Sub-Clause 8.1:

The Contractor shall check the design upon its receipt within XX days and shall give prompt notice to the Engineer, with a copy to the Employer, of any error, omission, fault or any other defect affecting the construction activities, in the design of or Specifications for the Works which the Contractor discovers when reviewing the Contract documents and other drawings issued by the Engineer and before the execution of the Works.

The Contractor is requested to issue following the elapse of the XX days a Design Certificate to the Engineer, with a copy to the Employer, limiting the design error, omission, fault or any other defect affecting the construction activities to the issues enclosed within the said Design Certificate.

Sub-Clause 10.3: Claims under Performance Security

Proposed Modification

No modification is to be introduced to the original wording of this Sub-Clause.

Sub-Clause 12.1: Sufficiency Tender

Proposed Modification

Delete the text of sub-Clause 12.1 and substitute with the following:

The Contractor shall be deemed to have satisfied himself as to the correctness and sufficiency of the Tender and the Contractor shall be deemed to have visited the Site taken account of the prevailing site conditions and of the prevailing political and security situation in the Project country, studied the Contract Documents and, by his own independent observations and inquiry, acquainted himself fully with local conditions, the accessibility of the Site (including Temporary Works Areas) and proper execution of the contract including, but not by way of limitation the following:

- *Space for the construction of Temporary Works, and for the storage of material, plant and equipment, access and routes to temporary and permanent work areas;*
- *The strict observance of stringent safety regulations and precautions to the satisfaction of the Engineer;*
- *The supply and use of labour, material, plant, equipment and the laws, statutes rules and regulations relevant thereto;*
- *Delays at the port of unloading for customs clearance;*
- *The meaning of every item shown upon the drawings or specified or listed in the Breakdown of the Lump Sum;*
- *All items of Works required under the Contract*
- *The character and levels of sub-soils or strata in or upon which the work is to be carried out, including recorded levels, extremes of weather and all other conditions of whatever nature;*
- *The requirements of all other Contractors working upon or adjacent to the Site including all necessary coordination works;*

- *All other things necessary for the proper construction and completion of the Works and remedying of any defects therein all in accordance with the Programme;*
- *Restriction on disturbance, pollution and noise levels during the construction period, in view of the close proximity of other buildings;*
- *The phasing of infrastructure and restoration of the retained buildings with the related traffic restrictions, fencing, demolition, protection, utility diversions, removal of telephone, water, electricity and drainage services. The laws, regulations, standards and any extra costs or expenses that may result from complying with authorities' requirements and applicable rules and codes, provided that this does not involve adjustments to the tender drawings and specifications;*
- *The positions of the Works, temporary Works, Labour camps and storage areas, etc... in relation to other structures and other Contractor's areas, proposed or existing and overhead/underground services and the like;*
- *Provision of any necessary temporary roads for the supply and installation of plant and equipment and any necessary protection and repairs of existing roads, pavements, services, etc... on site;*
- *The restrictions on the use of drainage and sewage infrastructure for the pumping away of waste or ground water from site operations;*

The sum named in the tender shall be deemed to allow for all obligations under the contract. Claims against the Employer brought on the grounds of want or lack of knowledge on misunderstanding of any of the foregoing shall not be permitted.

Sub-Clause 14.1: Programme to be Submitted

Proposed Modification

Delete the text of sub-Clause 14.1 and substitute with the following:

The Contractor shall submit to the Engineer a programme, showing the order of procedure, and method, in which the Contractor proposes to carry out the Works, in the form of a design, procurement and construction progress bar chart supplemented by a resource schedule together with a written narrative explaining the Contractor's arrangements for carrying out of the Works, including a description of the Contractor's Equipment and Temporary Works which the Contractor intends to supply, use, or construct, as the case may be. The Contractor shall produce a critical path analysis programme, in electronic format using approved computer software, to the satisfaction of the Engineer.

The programme shall be developed in stages as defined hereafter in 14.1.1, 14.1.2, 14.1.3 and 14.1.4.

Contractor to refer to the Specifications, SECTION 013216 – CONSTRUCTION SCHEDULE, for detailed requirements for the submission of programmes, including Preliminary Construction Programme, Contractor's Construction Programme and updates thereof.

14.1.1 Pre-scheduling Conference

The Contractor shall, within seven (7) days of issuing the Notice to Commence, attend a Pre-scheduling Conference with the Engineer to review the methods and procedures related to the Preliminary Construction Programme and Contractor's Construction Programme in accordance with the Contract requirements set out in the

Specifications. In addition to the Contract requirements, the Contractor shall discuss sequence of operations plus the cost and resource loading methodology.

14.1.2 Preliminary Construction Programme

Within XXXX (XX) days of issuing the Notice to Commence, the Contractor shall submit to the Engineer the Preliminary Construction Programme for his review. The Engineer and the Contractor shall meet within seven (7) days after the submittal of the Preliminary Construction Programme to review and make any necessary adjustments or revisions.

14.1.3 Contractor's Construction Programme

The Contractor shall submit the Contractor's Construction Programme within XXXX XX (XX) days of receipt of Engineer's comments on the Preliminary Construction Programme. The structure, level of detail, reports, and necessary information of the Contractor's Construction Programme shall be as required for in the Specifications. The Contractor's Construction Programme review process and subsequent updates shall be in accordance with the requirements in the Specifications. Any further resubmission required by the Engineer shall be submitted within fourteen (14) days of receipt of Engineer's comments.

Sub-Clause 14.3: Cash Flow Estimate to be Submitted

Proposed Modification

Delete the text of sub-Clause 14.3 and substitute with the following:

The Contractor shall, within the time stated in Part II of these Conditions after the date of the Letter of Acceptance, provide to the Engineer for his information a detailed cash flow estimate, in the form as may be advised by the Engineer and upon his request, of all payments to which the Contractor will be entitled under the Contract and the Contractor shall subsequently supply revised cash flow estimates when advised by the Engineer, if required to do so by the Engineer. The resulting S curve shall be updated to reflect the actual progress payments versus the planned progress payments.

Sub-Clause 47.1 Liquidated Damages for Delay

Proposed Modification

No modification is to be introduced to the original wording of this Sub-Clause.

Sub-Clause 47.2 Reduction of Liquidated Damages

Proposed Modification

Delete the text of sub-Clause 47.2 and substitute with the following:

If, before the Time for Completion of the whole of the Works or, if applicable, any Section, a Taking-Over Certificate has been issued for any part of the Works or of a Section, the liquidated damages for delay in completion of the remainder of the Works or of that Section shall, for any period of delay after the date stated in such Taking-Over Certificate, and in the absence of alternative provisions in the Contract, shall not be reduced. The provisions of this Sub-Clause shall only apply to the rate of liquidated damages and shall not affect the limit thereof.

In the Event that the Contractor would finish the required Works prior the Time for Completion stated in the Appendix to Tender and the Taking Over of the Works has been issued, the Contractor shall be entitled to get an additional financial compensation of XXXX per day to the period spanning between the Taking Over Certificate date and the Time for Completion.

Sub-Clause 51.2 Instructions for Variations

Proposed Modification

No modification is to be introduced to the original wording of this Sub-Clause.

Sub-Clause 52.3 Variations Exceeding 15 per cent

Proposed Modification

Replace the number and words in the title of this clause "exceeding 15 percent" with "exceeding XX percent". Replace the number and words in the second line, and second last line or the 3rd paragraph "in excess of 15 percent" with "in excess of XX percent".

Sub-Clause 55.1: Quantities

Proposed Modification

Delete the text of sub-Clause 55.1 and substitute with the following:

The Quantities (as defined in and set out in the Breakdown of the Lump Sum) shall be verified by the Contractor before submitting the Tender. The Contractor is responsible for the accuracy of the Quantities and no adjustment will be made in the event of any error or omission in the Quantities being discovered after the signing of the Contract and up to 5% of the quantities deviation.

Standard Sub-Clause 57.1: Method of Measurement

Proposed Modification

Delete the text of sub-Clause 57.1 and substitute with the following:

The method of measurement used for any subsequent measurement of variations shall be as stated in the preambles of the bill of quantities.

Standard Sub-Clause 67.1: Engineer's Decision

Proposed Modification

Replace "Engineer" with the "DAB".

Standard Sub-Clause 67.2: Amicable Settlement

Proposed Modification

Add at the End of the Sub-Clause 67.1:

Both Parties accept to consider XXXXX mediation center to be followed in amicable settlement

*Parties may elect to revert to amicable settlement on any project related issue only if:
(a) Both parties agree on the issue to be settled by giving notice in writing to the Engineer showing their explicit willingness to amicably settle the said issue;*

(b) The duration for amicable settlement per issue shall not exceed XXX days from the date of the receipt of both notices from the Contractor and the employer;

Standard Sub-Clause 67.3 Arbitration

Proposed Modification

Keep the original wording of the Sub-Clause and add the followings at the End:

Add at the end the following:

The venue of the Arbitration shall be XXXXXXXXX

The Language of the Arbitration shall be XXXXXXXX

The Law of the Arbitration shall be the XXXXXXXX Laws

Standard Sub-Clause 67.4: Failure to Comply with Engineer's Decision

Proposed Modification

Add at the end of sub-Clause 67.4 the following:

The arbitral award in relation to the failure to comply with Engineer's Decision shall be binding upon the Parties and shall not be subject to any appeal in any court.

Standard Sub-Clause 69.1: Default of Employer

Proposed Modification

Leave the Clause in the Contract as per the original FIDIC fourth edition form wording.

Standard Sub-Clause 70.1 Increase or Decrease of Cost

Proposed Modification

Delete the text of sub-Clause 70.1 and substitute with the following:

The Contract Price shall not be subject to any adjustment in respect of rise or fall in the cost of labour, materials or any other matters affecting the cost of execution of the Contract including a period of 6 months beyond the Time of Completion. The Employer shall not be liable for any fluctuation in the exchange rate of any currency during the total of such period. The Contract Price shall not be subject to any adjustment after the end of this six month period if the extension of time is due to delays by the Contractor.

Standard Sub-Clause 70.2 Subsequent Legislation

Proposed Modification

Leave the Clause in the Contract as per the original FIDIC fourth edition form wording.

Standard Sub-Clause 71.1 Currency Restrictions

Proposed Modification

Leave the Clause in the Contract as per the original FIDIC fourth edition form wording.

Standard Sub-Clause 72.1 Rates of Exchange

Proposed Modification

Leave the Clause in the Contract as per the original FIDIC fourth edition form wording.

Standard Sub-Clause 72.2 Currency Proportions

Proposed Modification

Leave the Clause in the Contract as per the original FIDIC fourth edition form wording.

Standard Sub-Clause 72.3 Currencies of Payment for Provisional Sums

Proposed Modification

Leave the Clause in the Contract as per the original FIDIC fourth edition form wording.

6.3 Guidelines to the Introduction of any Modifications to the Standard Form

Having gone through this research that deals with modifications, the general guidelines for the introduction of any modification needs to preserve three major tracks: Maintain clarity and Coherence, Add Clarifications, and Maintain the Responsibility Balance.

6.3.1 Maintain Clarity and Coherence

1. Understand the reason behind the introduction of the said modification
2. Make sure that the introduced modifications do really serve the intent it was originally introduced for.
3. Make sure that the introduced modification does not conflict with the governing law.
4. Ascertain that the modification introduced does consider the proper cross-referencing between different clauses.
5. Investigate any conflict that might be introduced between the introduced modification and any other contractual clause and resolve for the same if it exists.
6. Ascertain that the introduced modification does not conflict with any other introduced modification.
7. Ensure that the introduced modification does not constitute any sort of redundancy to any other sub-clause within the standard form.
8. Carefully introduce modifications in a way to consider the elimination of any possible redundancy to any other introduced modification.

6.3.2 Add Clarifications

1. Insert the information that is recommended to be inserted by the standard guide.
2. Elaborate on methods/techniques for calculation of cost items required to be determined by the engineer such as variation orders or cost compensation.

3. Elaborate on methods/techniques for calculation of additional time entitlement that is contractually required to be determined by the Engineer.

6.3.3. *Maintain the Responsibility Balance*

1. Ensure that the introduced modification serves the purpose and does not shift the responsibility to the party that is unable to better control and manage it.
2. Ensure that the party to which the responsibility is being transferred is aware of the consequences of such responsibility and is able to bear such consequences.
3. Do not merge general conditions of contract with the particular ones to allow the parties to identify the changes to the general conditions of contract including the shifts in responsibilities.
4. Ensure that the party bearing an additional responsibility has accounted for (priced) it and is able to assume such responsibility if it surfaces.

6.4. Contribution to Knowledge and Practice

The following points identify different tracks that this research can contribute to knowledge through:

- Given that Consultants prepare Contract Conditions, the Consultants can learn from the analysis of these clauses and by adhering to the guidelines that may contribute to better drafting of Contracts.
- Contracting Companies can benefit from these clauses as they could better safeguard themselves from troublesome clauses and better negotiate to improve/account for such clauses.
- Publishers of Standard Forms may consider including these research findings, since some of the written procedural details may provide clearer understanding of the intent of the modification and the upcoming evaluation criteria during the contract award phase.
- It can be used as a guideline that would improve the project performance since the proper tailoring of the conditions of contract would definitely improve the project duration and associated project cost.
- The achieved guidelines provide a practical guideline that would reinstate the link between the project performance and conditions of contract which were considered by Dissanayaka & Kumaraswamy (1999) and Atkinson (1990).

- It can be used in project management studies as academic material to help raise awareness to the significance of proper Conditions of Contract.
- Some notions that were witnessed in this research can change the general practice governing the industry; for instance, the perception that the entity executing the works, being the Contractor, needs to be punished for not meeting some of its obligations maybe/ should be altered to encourage the Contractor to fulfill duties by offering a certain bonus for fulfilling the same. Another notion that deserves attention is to consider the Contractor as part of the project planning team. The same need to start by listening to the bidding Contractors' point of view in relation to the project. The same if properly considered would ensure a certain extent of Contractors' 'devotion' toward the project and Employer.

6.5. Research Limitations

The survey indicated that the most commonly used Standard contract form for the past 10 years is the Conditions of Contract for Works of Civil Engineering Construction (Red Book 4th Edition 1987) with 28% then next the Conditions of Contract for Construction, for Building and Engineering Works, Designed by the Employer (Red Book 1999) with 24% adoption. It is of note that the difference in the percent adoption between the ranked first and the ranked second Standard contract form appears to be around 4%, however, it is not that. Since the Conditions of Contract for Works of Civil Engineering Construction (Red Book 4th Edition 1987) was ranked first, the analysis considered this as the Standard contractual form.

6.6. Future Research

Similar research using the same methodology could be used to examine the modifications introduced to the Conditions of Contract for Construction, for Building and Engineering Works, Designed by the Employer (Red Book 1999) which was considered the 2nd in ranking for the most commonly used standard contract form.

Publications

Publications

SADEK, S and KULATUNGA, U (2014), An Overview of Standard Contractual Forms Modifications in the Construction Industry- The Middle East. In: *International conference on Construction in a Changing World Heritance Kandalama, Sri Lanka 4th-7th May 2014*.

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Appendices

Appendix A

Chronological Listing of Research on Sources of Dispute (Fenn, 2006)

Researchers	Findings (sources of disputes)
Diekmann & Nelson (1985)	The two most common causes of contract claims were (1) design errors (46%) and (2) discretionary or mandatory changes (26%). Other claim headings include: differing site conditions; weather; strikes and value engineering.
Mathews & Ashley (1985)	96 items were concluded as construction disputes within contract clauses
Watts & Scrivener (1992)	59 categories of disputes and 117 sources of disputes within which the subgroups are: (1) determination of the agreement, (2) payment, (3) the site and execution of work, (4) time, (5) negligence and nuisance, (6) final certificate payment.
Lewis et al. (1992)	Five causes of conflict: (1) one of the potential risk events occurs, (2) one or more of the parties suffers some loss as a result of it, (3) the damaged party had not identified the risk as relevant to the project, (4) the risk was identified but insufficient steps were taken to mitigate its effects, (5) the allocation of risks between the various parties to the contract was not clearly established in the first place.
Reyay (1992)	Seven most frequent causes for claims: (1) inadequate site and/or soil investigation prior to starting the design, (2) starting design efforts and/or soil investigation too late prior to starting the design (3) calling for bids with an incomplete set of drawings, (4) endeavouring to complete design through shop drawing review, (5) introducing untimely design revisions without allowing commensurate time extension for the completion of the project or without recognizing the contractor's right to impact costs, (6) interfering both with the sequence and the timing of construction (e.g. to compensate for the delay in the delivery of owner-supplied equipment/material), (7) continuing to introduce changes under the guise of correcting deficiencies.
Construction Industry Council (1994)	Six categories of main reasons for disputes: (1) general, (2) consultants, (3) client, (4) contractor, (5) subcontractors, (6) manufacturers and suppliers.
Dickman et al. (1994)	Three areas: (1) people, (2) process, (3) project.
Jergeas & Hartman (1994)	Well known reasons by which claims arise: (1) increase in scope of work, (changes, extras and errors), (2) inadequate bid information, (3) faulty and/or late owner-supplied equipment and material, (4) inferior quality of drawings and/or specifications giving rise to ambiguities in contract requirements, (5) insufficient time for bid preparation, (6) stop-and-go operations because of lack of coordination, design information, equipment, or material, (7) work in congested areas and overcrowding, (8) acceleration to regain schedule, (9) inadequate investigation before bidding, (10) unbalanced bidding and underestimation
Lee (1994)	Disputes from contract problems: (1) unfair contract clauses, (2) vague definition of contract documents (in terms of performance period, payment, quality and variations), (3) not comprehensive stipulation
Rhys Jones (1994)	Ten factors in the development of disputes: (1) poor management, (2) adversarial culture, (3) poor communications, (4) inadequate design, (5) economic environment, (6) unrealistic tendering, (7) influence of lawyers, (8) unrealistic client expectations, (9) inadequate contract drafting, (10) poor workmanship

Researchers	Findings (sources of disputes)
Sample <i>et al.</i> (1994)	The most common contributing factors in claims are: (1) increase in scope of the work, (2) weather, (3) restricted access, (4) acceleration
Watts & Scrivener (1994)	290 sources of disputes are identified from 60 cases in each country and the 21 categories are grouped into five sub-groups. The most frequent source of disputes in the UK is negligence, while in Australia failure and determination have the highest occurrence
Assaf <i>et al.</i> (1995)	56 factors, which were grouped into nine major areas: (1) materials, (2) manpower, (3) equipment, (4) financing, (5) environment, (6) charges, (7) government relations, (8) contractual relationships, (9) scheduling and controlling techniques
Bristow & Vasilopoulous (1995)	Five primary causes of claims: (1) unrealistic expectations by the parties, (2) ambiguous contract documents, (3) poor communications between project participants, (4) lack of team spirit among participants, (5) a failure of participants to deal promptly with changes and unexpected conditions
Murdoch & Hughes (1996)	Background to disputes: (1) motivation factors of individuals, (2) pre-conceptions about roles, (3) project success or failure, (4) the roots of contractual disputes, (5) business relations
Sykes (1996)	Two major sources: (1) misunderstanding due to lack of clarity, (2) unpredictability of unforeseen circumstance
Kumaraswamy (1997a)	Heads of claim categories: (1) cost, (2) time extension
Kumaraswamy (1997b)	Two categories: (1) root causes, (2) proximate causes
Hu (1998)	Factors of construction disputes: (1) defective performance in quality, (2) unfair contract clauses, (3) conservative attitude of public employer and supervising engineers, (4) negligence of design and supervision
Vidogah & Ndekugri (1998)	Eight heads of claims likely to be disputed (in rank order): (1) cost of disruption, (2) head office overheads, (3) interest and finance charges, (4) cost of preparing claims, (5) loss of profit, (6) inflation of costs, (7) on-site overheads, (8) others
Al-Momani (1999)	Seven categories: (1) poor design, (2) change orders, (3) weather, (4) site condition, (5) late delivery, (6) economic condition, (7) increase in quantity
Fenn (1999)	Three independent variables predicted construction disputes well: (1) the level of variations, (2) the success of the employer's advisors on a past project, (3) the tender period
Gould <i>et al.</i> (1999)	Nine areas of issues in dispute: (1) project delays, (2) change in the scope of the work, (3) payment issues, (4) differing site conditions, (5) design issues, (6) defective work or product, (7) site administration problems, (8) property damage, (9) personal injury
Liang (1999)	Four types of most frequently seen claims: (1) scope of work claim, (2) delay claim, (3) change of site condition claim/adverse physical conditions or obstructions, (4) acceleration claim
Sykes (1999)	Origins of disputes: (1) omission and unforeseen events, (2) lack of capacity to settle claims, (3) different expectations.

Researchers	Findings (sources of disputes)
Molenaar <i>et al.</i> (2000)	Three factors found to have influence on or be closely related to dispute potential: (1) people issue, (2) project complexity, (3) owner management ability
Mitropoulos & Howell (2001)	Basic factors driving the development of disputes are: (1) project uncertainty, (2) contractual problems, (3) opportunistic behaviour
Kululunga <i>et al.</i> (2001)	Four basic sources: (1) contract documents due to errors, defects and omissions, (2) failure to appreciate the real cost of a project at the beginning, (3) changed conditions, (4) stakeholders involved in a project
Ren <i>et al.</i> (2001)	Three factors: (1) social, (2) industrial, (3) project
Tsai (2001)	Five areas of disputes: (1) performance period, (2) payment, (3) quality, (4) quantity, (5) contract
Wang (2001)	Grounds for claims: (1) unfairness of contract/unfairness of risk allocation, (2) variations, (3) defective contract documents, (4) delay claim, (5) circumstance changes, (6) breach of obligations of employers, (7) termination of contract
Yao (2001)	Disputes can be categorized into two stages; (1) before contract award, (2) after contract award
Kehinde & Aiyetan (2002)	Highest source of contractual claims in most building contracts is constituted by (1) variations, (2) additional works
Lo (2002)	Causes of construction conflict: (1) differences in goals and objectives of parties in the project, (2) differences in contract interpretation between the construction manager and contractor that have to be compromised by serious negotiation which may take a long period of time, (3) lack of understanding about the needs of others also involved in the planning, design and construction process, (4) uncertainty about role, responsibility, authority and procedure ambiguity, (5) unclear reward structure or opportunity for the project participants, (6) specific allocation of limited resources such as materials, capital, labour, etc., (7) excessive demands on resources normally depended on to assist in the resolution of conflict, (8) incorrect assumptions made from biased perceptions, (9) demands for higher quality than specified, (10) failure to provide products in conformity with user requirements, (11) insufficient time to make required decisions, (12) inability to do the job, (13) subcontractor performance problems, (14) frustration over a lack of control of events affecting performance, (15) desire to take advantage of those in a weaker position, (16) adverse relationship between client and contractors, (17) work slowdowns and strikes, (18) interpersonal conflicts, (19) regulatory problems, (20) lack of communication
Yan (2002)	Construction disputes in Taiwan fall into four categories: (1) problems occur in planning and designing stage, (2) problems occur in contract performance stage, (3) problems occur in completion and acceptance stage, (4) problems occur in maintenance stage, ; four sources of disputes: (1) contractual factors, (2) technological factors, (3) external factors, (4) artificial factors
Chang & Ive (2003)	Natures of two types of disputes are: (1) pure cognitive dissonance, (2) opportunism intention to take advantage of one party's vulnerability

Appendix B
National Standard Contract Models in Different Countries

Country	Common forms of contract for large projects	Common forms for international projects
<u>Belgium</u>	Public works - regulated by the General Contracting Conditions of 26 September 1996 (<i>Algemene aannemingsvoorwaarden</i> or <i>Cahier général des charges</i>). Private works - bespoke contracts usually created by modifying standard contracts provided for registered members by professional associations such as the Building Confederation and the Real Estate Confederation. House construction - regulated by Law of 9 July 1971, amended in 1993 (<i>Wet/Loi Breyné</i>) which imposes several contractual conditions.	FIDIC contracts most common. Rules in the Draft Common Frame of Reference (book four, part C, chapter three) occasionally used but not mandatory.
<u>Brazil</u>	Bespoke contracts common, especially for large projects. Standard form contracts, especially FIDIC contracts more popular in recent years due to the influence of international players, multilateral investment agencies and promotion by FIDIC. The Red Book and Silver Book contracts are particularly common.	FIDIC contracts common.
<u>Canada</u>	Local standard forms published by the Canadian Construction Documents Committee (CCDC), Canadian Construction Association (CCA), Royal Architectural Institute of Canada (RAIC), and both local and national governments and authorities.	Bespoke and FIDIC contracts common. Local Canadian forms available but rarely used.
<u>Czech Republic</u>	FIDIC contracts usually used for large projects, sometimes adjusted to comply with Czech law. The Construction Council of the Czech Society for Construction Law (SIA), Czech Chamber of Civil Engineers and Ministry of Transport for road construction issue standard form provisions and contracts.	FIDIC contracts common, sometimes adjusted to comply with Czech law.
<u>France</u>	Under both property development agreements (<i>contrats de promotion immobilière</i>) (CPIs) and sale pending construction agreements (<i>vente en l'état futur d'achèvement</i>) (VEFAs), local "construction contracts" (<i>marchés de travaux</i>) are used.	Same local contracts apply as for national projects, providing the governing law is French.
<u>Germany</u>	Bespoke contracts.	FIDIC contracts common.

	Local contracts containing standard terms and conditions (STC), whose content is governed by the Civil Code (BGB). Parts of the General Contract Provisions for the Performance of Construction Works (VOB) are usually included.	
<u>Hong Kong</u>	Local standard contracts provided by the Hong Kong Special Administrative Region (SAR) government commonly used for government construction projects. Local standard contracts for private domestic projects provided by many associations, including the Joint Contracts Tribunal (JCT), Royal Institution of Surveyors (RICS), and Hong Kong Institute of Architects (HKIA).	FIDIC contracts common.
<u>Ireland</u>	Local standard forms of contract provided by the Royal Institute of Architects of Ireland (RIAI), Engineers Ireland (IEI) and Government Construction Contracts Committee (GCCC). GCCC contracts mandatory for all public works. UK and international forms also common, including FIDIC contracts.	Same contracts apply as for large national projects.
<u>Japan</u>	Private works - local standard form of contract used, jointly prepared by the major industry associations for contractors and architects. Public works - Model PFI contract, prepared by the PFI Promotion Office of the Cabinet Office of Japan.	FIDIC contracts or standard forms prepared by the Engineering Advancement Association of Japan (ENNA) usually used.
<u>Poland</u>	FIDIC contracts common. American Institute of Architects (AIA) forms of contract recognised on the market but not frequently used.	Substantially amended FIDIC contracts common, usually those used for EPC/turnkey projects. Bespoke contracts based on internationally recognised forms of contract also used.
<u>Romania</u>	FIDIC contracts common.	FIDIC contracts common.
<u>Russian Federation</u>	FIDIC contracts common, with significant modifications for mandatory local law.	FIDIC contracts common. Other various international standard form contracts sometimes used.
<u>Slovak Republic</u>	FIDIC contracts. German Construction Contract Procedures (VOB) contracts. Local standard form contracts based on FIDIC standards also used, prepared by the Slovak Association of Consulting Engineers (SACE).	FIDIC contracts common. VOB contracts used in some situations.

South Africa	<p>FIDIC contracts.</p> <p>The New Engineering Contract (NEC) Engineering and Construction Contract (NEC3).</p> <p>The Joint Building Contracts Committee (JBCC) 2000 suite of contracts.</p> <p>The General Conditions of Contract for Construction Works 2004 (GCC) produced by the South African Institute for Civil Engineering.</p>	Same contracts apply as for large national projects.
<u>Sweden</u>	<p>Local standard forms published by the Construction Contracts Committee (<i>Byggandets Kontraktskommitté</i>) are used, called the AB 04 or ABT 06.</p>	FIDIC contracts common.
<u>UK</u> <u>(England and Wales)</u>	<p>The Joint Contracts Tribunal (JCT) provides the Major Project Construction Contract, the Design and Build Contract, and Standard Forms of Building Contract.</p> <p>Other standard form contracts include the NEC3 and the GC/Works contracts (used in connection with government works).</p>	FIDIC contracts common.
<u>United States</u>	<p>Local standard forms used, published by the American Institute of Architects (AIA), Engineers Joint Contract Documents Committee (EJCDC) and Associated General Contractors (AGC).</p> <p>Bespoke contracts commonly used for large projects.</p>	FIDIC contracts common.

Appendix C

Phase I & Phase II Survey form (Survey Form 01)

Survey Form 01

Phase I and Phase II

Identify which family of Standard contract form is the mostly being used in The Middle East Region

Company Name: _____

Field Of Works: _____

Name: _____

Title: _____

Date: _____

Please indicate the number/ percentage of use out of the total use, for the past 10 years, of the following contract families:

	Contract Family	% Adoption
1	The American Institute of Architects (AIA)	
2	Fédération Internationale des Ingénieurs-Conseils (FIDIC)	
3	The Joint Contracts Tribunal (JCT)	
4	Institution of Civil Engineers (ICE)	
5	The New Engineering Contract (NEC)	
6	Institution of Engineering and Technology (IET)	
7	The Association of Consultant Architects (ACA)	
8	BE Collaborative Contracts	
9	ConsensusDOCS Contracts	
10	International Chamber of Commerce (ICC)	
11	Family 11	
12	Family 12	
13	Other(s)	
	Total	100%

Appendix D
Phase III Survey form (Survey Form 02)

Survey Form 02

Phase III

Identify which Contractual Form of the Standard Contract Family identified

Under Phase II is mostly being used.

Company Name: _____

Field Of Works: _____

Name: _____

Title: _____

Date: _____

Please indicate the number/ percentage of use, for the past 10 years, out of the total use of the following contractual forms within the FIDIC family of Contracts and Agreements.

	Standard Contract Family	% Adoption
1	<i>Conditions of Contract for Electrical and Mechanical Works including erection on site (Yellow Book)</i> <i>First Edition 1963</i> <i>Third Edition 1987</i>	
2	<i>Conditions of Contract for Works of Civil Engineering Construction (Red Book 4th)</i> <i>First Edition 1957</i> <i>Fourth Edition 1987</i> <i>Reprinted 1988 with editorial amendments</i> <i>Reprinted 1992 with further amendments</i> <i>Supplement to the 1992 Red Book published in 1996</i>	
3	<i>Conditions of Contract for Design-Build and Turnkey (Orange Book)</i> <i>First Edition 1995</i>	
4	<i>Conditions of Sub-contract for Works of Civil Engineering Construction</i> <i>First Edition 1994</i>	
5	<i>Client/Consultant - Model Services Agreement (White Book) *</i> <i>Third Edition 1998</i> <i>Fourth Edition 2006</i>	

6	<i>Short Form of Contract (Green Book) First Edition 1999</i>	
7	<i>Conditions of Contract for Construction, for Building and Engineering Works, Designed by the Employer (Red Book 1999) First Edition 1999</i>	
8	<i>Conditions of Contract for Plant and Design-Build for Electrical and Mechanical Plant, and for Building and Engineering Works, Designed by the Contractor (Yellow Book) First Edition 1999</i>	
9	<i>Conditions of Contract for EPC Turnkey Projects (Silver Book) First Edition 1999</i>	
10	<i>Form of Contract for Dredging & Reclamation Works (Blue Book) First Edition 2006.</i>	
11	<i>Conditions of Contract for Construction: The Harmonised Multilateral Development Banks Form of Contract (Pink Book) First Edition 2005 Third Edition 2010</i>	
12	<i>Conditions of Contract for Design, Build and Operate Projects (Gold Book) First Edition 2008</i>	
13	<i>Conditions of Subcontract for Construction (compatible with the 1999 Red Book) First Edition 2011</i>	
	Total	100%

* The following form of Contract is introduced for completeness purposes only and do not represent Employer/ Contractor procurement Contract.

Appendix E
Sub-Clauses MRI distribution histogram

	O	A	N	W
Definitions and Interpretation				
1.3 Interpretation				
Engineer and Engineer's Representative				
2.3 Engineer's Authority to Delegate				
2.6 Engineer to Act impartially				
4.1 Subcontracting				
5.1 Language/s and Law				
6.2 One of Copy of Drawings to be Kept on Site				
6.5 Failure by Contractor to Submit Drawings				
7.3 Responsibility Unaffected by Approval				
8.2 Site Operations and Methods of Construction				
10.2 Period of Validity of Performance Security				
12.1 Sufficiency of Tender				
14.1 Programme to be Submitted				
14.4 Contractor not Relieved of Duties or Responsibilities				
16.2 Engineer at Liberty to Object				
19.1 Safety, Security and Protection of the Environment				
20.2 Responsibility to Rectify Loss or Damage				
21.1 Insurance of Works and Contractor's Equipment				
21.4 Exclusions				
22.3 Indemnity by Employer				
23.3 Cross Liabilities				
25.1 Evidence and Terms of Insurances				
25.4 Compliance with Policy Conditions				
28.1 Patent Rights				
30.1 Avoidance of Damage to Roads				
30.4 Waterborne Traffic				
32.1 Contractor to Keep Site Clear				
34.1 Engagement of Staff and Labour				
36.1 Quality of Materials, Plant and Workmanship				
36.4 Cost of Tests not Provided for				
37.2 Inspection and Testing				
37.5 Independent Inspection				
39.1 Removal of Improper Work, Materials or Plant				
40.1 Suspension of Work				
Commencement and Delays				
42.2 Failure to Give Possession				
44.1 Extension of Time for Completion				
45.1 Restriction on Working Hours				
47.2 Reduction of Liquidated Damages				
48.3 Substantial Completion of Parts				
49.1 Defects Liability Period				
49.4 Contractor's Failure to Carry Out Instructions				
51.1 Variations				
52.2 Power of Engineer to Fix Rates				
Procedure for Claims				
53.3 Substantiation of Claims				
Contractor's Equipment, Temporary Works and Materials				
54.3 Customs Clearance				
54.6 Costs for the Purpose of Clause 63				
Measurement				
57.1 Method of Measurement				
58.1 Definition of "Provisional Sum"				
Nominated Subcontractors				
59.3 Design Requirements to be Expressly Stated				
Certificates and Payment				
60.3 Payment of Retention Money				
60.6 Final Statement				
60.9 Cessation of Employer's Liability				
62.1 Defects Liability Certificate				
63.1 Default of Contractor				
63.4 Assignment of Benefit of Agreement				
65.1 No Liability for Special Risks				
65.4 Projectile, Missile				
65.7 Removal of Contractor's Equipment on Termination				
66.1 Payment in Event of Release from Performance				
67.2 Amicable Settlement				
Notices				
68.3 Change of Address				
69.2 Removal of Contractor's Equipment				
69.5 Resumption of Work				
70.2 Subsequent Legislation				
72.1 Rates of Exchange				

Appendix F
Phase IV- Large Modifications Semi Structured Interview
(Survey Form 03)

Survey Form 03

Phase IV

Investigate the reasons and consequences governing the major modifications

Interview Concerning the Modification Reasons

Company Name: _____

Field Of Works: _____

Name: _____

Title: _____

Date: _____

General Obligations

8.1 Contractor's General Responsibilities

- i. Why the specific modification is being introduced?
- ii. What are the implications of such modifications?
- iii. What conclusions/ consequences of the modifications can be drawn?
- iv. Any other proposition/ recommendation concerning the modifications being witnessed

10.3 Claims under Performance Security

- i. Why the specific modification is being introduced?
- ii. What are the implications of such modifications?
- iii. What conclusions/ consequences of the modifications can be drawn?
- iv. Any other proposition/ recommendation concerning the modifications being witnessed

12.1 Sufficiency of Tender

- i. Why the specific modification is being introduced?
- ii. What are the implications of such modifications?

- iii. What conclusions/ consequences of the modifications can be drawn?
- iv. Any other proposition/ recommendation concerning the modifications being witnessed

14.1 Programme to be Submitted

- i. Why the specific modification is being introduced?
- ii. What are the implications of such modifications?
- iii. What conclusions/ consequences of the modifications can be drawn?
- iv. Any other proposition/ recommendation concerning the modifications being witnessed

Commencement and Delays

47.1 Liquidated Damages for Delay

- i. Why the specific modification is being introduced?
- ii. What are the implications of such modifications?
- iii. What conclusions/ consequences of the modifications can be drawn?
- iv. Any other proposition/ recommendation concerning the modifications being witnessed

47.2 Reduction of Liquidated Damages

- i. Why the specific modification is being introduced?
- ii. What are the implications of such modifications?
- iii. What conclusions/ consequences of the modifications can be drawn?
- iv. Any other proposition/ recommendation concerning the modifications being witnessed

Alterations, Additions and Omissions

51.2 Instructions for Variations

- i. Why the specific modification is being introduced?
- ii. What are the implications of such modifications?
- iii. What conclusions/ consequences of the modifications can be drawn?
- iv. Any other proposition/ recommendation concerning the modifications being witnessed

52.3 Variations Exceeding 15 per cent

- i. Why the specific modification is being introduced?
- ii. What are the implications of such modifications?
- iii. What conclusions/ consequences of the modifications can be drawn?
- iv. Any other proposition/ recommendation concerning the modifications being witnessed

Measurement

55.1 Quantities

- i. Why the specific modification is being introduced?
- ii. What are the implications of such modifications?
- iii. What conclusions/ consequences of the modifications can be drawn?
- iv. Any other proposition/ recommendation concerning the modifications being witnessed

56.1 Works to be measured

- i. Why the specific modification is being introduced?
- ii. What are the implications of such modifications?
- iii. What conclusions/ consequences of the modifications can be drawn?

- iv. Any other proposition/ recommendation concerning the modifications being witnessed

Settlement of Disputes

67.1 Engineer's Decision

- i. Why the specific modification is being introduced?
- ii. What are the implications of such modifications?
- iii. What conclusions/ consequences of the modifications can be drawn?
- iv. Any other proposition/ recommendation concerning the modifications being witnessed

67.2 Amicable Settlement

- i. Why the specific modification is being introduced?
- ii. What are the implications of such modifications?
- iii. What conclusions/ consequences of the modifications can be drawn?
- iv. Any other proposition/ recommendation concerning the modifications being witnessed

67.3 Arbitration

- i. Why the specific modification is being introduced?
- ii. What are the implications of such modifications?
- iii. What conclusions/ consequences of the modifications can be drawn?
- iv. Any other proposition/ recommendation concerning the modifications being witnessed

67.4 Failure to Comply with Engineer's Decision

- i. Why the specific modification is being introduced?

- ii. What are the implications of such modifications?
- iii. What conclusions/ consequences of the modifications can be drawn?
- iv. Any other proposition/ recommendation concerning the modifications being witnessed

Changes in Cost and Legislation

70.1 Increase or Decrease of Cost

- i. Why the specific modification is being introduced?
- ii. What are the implications of such modifications?
- iii. What conclusions/ consequences of the modifications can be drawn?
- iv. Any other proposition/ recommendation concerning the modifications being witnessed

70.2 Subsequent Legislation

- i. Why the specific modification is being introduced?
- ii. What are the implications of such modifications?
- iii. What conclusions/ consequences of the modifications can be drawn?
- iv. Any other proposition/ recommendation concerning the modifications being witnessed

Currency and Rates of Exchange

71.1 Currency Restrictions

- i. Why the specific modification is being introduced?
- ii. What are the implications of such modifications?
- iii. What conclusions/ consequences of the modifications can be drawn?
- iv. Any other proposition/ recommendation concerning the modifications being witnessed

72.1 Rates of Exchange

- i. Why the specific modification is being introduced?
- ii. What are the implications of such modifications?
- iii. What conclusions/ consequences of the modifications can be drawn?
- iv. Any other proposition/ recommendation concerning the modifications being witnessed

72.2 Currency Proportions

- i. Why the specific modification is being introduced?
- ii. What are the implications of such modifications?
- iii. What conclusions/ consequences of the modifications can be drawn?
- iv. Any other proposition/ recommendation concerning the modifications being witnessed

72.3 Currencies of Payment for Provisional Sums

- i. Why the specific modification is being introduced?
- ii. What are the implications of such modifications?
- iii. What conclusions/ consequences of the modifications can be drawn?
- iv. Any other proposition/ recommendation concerning the modifications being witnessed

Appendix G

Phase IV- Large Modifications Questionnaire Survey
(Survey Form 04)
(Survey Form 05)

Survey Form 04

Phase IV

Investigate Project Duration Related Impact

	Sources							<i>Average Project Duration Related Impact (months)</i>	
	Organization 1	Organization 2	Organization 3	Organization 4	Organization 5	Organization 6	Organization 7		
<i>PART I - GENERAL CONDITIONS of CONTRACT</i>									
<i>General Obligations</i>									
8.1 Contractor's General Responsibilities									
10.3 Claims under Performance Security									
12.1 Sufficiency of Tender									
14.1 Programme to be Submitted									
14.3 Cash Flow Estimate to be Submitted									
<i>Commencement and Delays</i>									
47.1 Liquidated Damages for Delay									
47.2 Reduction of Liquidated Damages									
<i>Alterations, Additions and Omissions</i>									
51.2 Instructions for Variations									
52.3 Variations Exceeding 15 per cent									
<i>Measurement</i>									
55.1 Quantities									
56.1 Method of Measurement									
<i>Settlement of Disputes</i>									
67.1 Engineer's Decision									
67.2 Amicable Settlement									
67.3 Arbitration									
67.4 Failure to Comply with Engineer's Decision									
<i>Default of Employer</i>									
69.1 Default of Employer									
<i>Changes in Cost and Legislation</i>									
70.1 Increase or Decrease of Cost									

70.2 Subsequent Legislation								
<i>Currency and Rates of Exchange</i>								
71.1 Currency Restrictions								
72.1 Rates of Exchange								
72.2 Currency Proportions								
72.3 Currencies of Payment for Provisional Sums								
<i>Total Duration</i>								

Survey Form 05

Phase IV

Investigate Project Cost Related Impact

	Sources							<i>Average Project Cost Related Impact (%)</i>	
	Organization 1	Organization 2	Organization 3	Organization 4	Organization 5	Organization 6	Organization 7		
<i>PART I - GENERAL CONDITIONS of CONTRACT</i>									
<i>General Obligations</i>									
8.1 Contractor's General Responsibilities									
10.3 Claims under Performance Security									
12.1 Sufficiency of Tender									
14.1 Programme to be Submitted									
14.3 Cash Flow Estimate to be Submitted									
<i>Commencement and Delays</i>									
47.1 Liquidated Damages for Delay									
47.2 Reduction of Liquidated Damages									
<i>Alterations, Additions and Omissions</i>									
51.2 Instructions for Variations									
52.3 Variations Exceeding 15 per cent									
<i>Measurement</i>									
55.1 Quantities									
56.1 Method of Measurement									
<i>Settlement of Disputes</i>									
67.1 Engineer's Decision									
67.2 Amicable Settlement									
67.3 Arbitration									
67.4 Failure to Comply with Engineer's Decision									
<i>Default of Employer</i>									
69.1 Default of Employer									
<i>Changes in Cost and Legislation</i>									
70.1 Increase or Decrease of Cost									
70.2 Subsequent Legislation									

<i>Currency and Rates of Exchange</i>								
71.1 Currency Restrictions								
72.1 Rates of Exchange								
72.2 Currency Proportions								
72.3 Currencies of Payment for Provisional Sums								
<i>Total Cost</i>								

Appendix H
Additionally Introduced Clauses and Sub-Clauses

Sub-Clause 11.2: Access to Data

Data made available by the Employer in accordance with Sub-Clause 11.1 shall be deemed to include data listed elsewhere in the Contract.

Sub-Clause 25.5: Source of Insurance

The Contractor shall place all insurance relating to the Contract (including, but not limited to the insurance referred to in clauses 21, 23 and 24) with an insurance company approved by the Employer.

Sub-Clause 34.2: Employment of Persons in the Services of Others

The Contractor shall not recruit or attempt to recruit his staff and labour from amongst persons in the services of the Employer or Engineer.

Sub-Clause 34.3: Repatriation of Labour

The Contractor shall be responsible for the return of all such persons recruited and employed for the purposes of or in connection with the Contract to the place where they were recruited or to their domicile.

Sub-Clause 34.4: Accident Prevention Officer; Accidents

The Contractor shall have on his staff on Site an officer dealing only with questions regarding the safety and protection against accidents of all staff and labour. This officer shall be qualified for this work and shall have authority to issue instructions and shall take protective measures to prevent accidents.

Sub-Clause 34.5: Health and Safety

Due precautions shall be taken by the Contractor, and at his own cost, to ensure the safety of his staff and labour and, in collaboration with and to the requirements of the local health authorities, to ensure that medical support, first aid equipment and stores and sick bay are available at the site and that suitable arrangements are made for the prevention of epidemics and of all necessary welfare and hygiene requirements.

The Contractor shall abide by all the related safety, security and health regulations and codes as required by the Employer & the local Lebanese Laws.

Sub-Clause 34.6: Measure against Insect and Pest Nuisance

The Contractor shall at all times take the necessary precautions to protect all staff and labour employed on the Site from insect nuisance, rats, and other pests and reduce the dangers to health and the general nuisance caused by the same. He shall comply with all the regulations of the local health authorities in these respects and shall in particular arrange to spray thoroughly with approved insecticide all buildings erected on the Site. Such treatment shall be carried out at least once a year or as instructed by the Engineer. The Contractor shall warn his staff and labour of the dangers of Epidemics.

Sub – Clause 34.7: Epidemics

In the event of any outbreak of illness of an epidemic nature, the Contractor shall comply with and carry out such regulations, orders and requirements as may be made with by the Government or the local medical or sanitary authorities, for the purpose of dealing with and overcoming the same.

Sub – Clause 34.9: Supply of Water

The Contractor shall arrange for the provision of a sufficient supply of drinking water and other water for all his staff and labour.

Sub – Clause 34.10: Alcoholic Liquor or Drugs

The Contractor shall not, otherwise than in accordance with the Statutes, Ordinances and Government Regulations or Orders for the time being in force, import, sell, give, barter, or otherwise dispose of any alcoholic liquor or drugs, or permit or suffer any such importation, sale, gift, barter disposal by his Sub-Contractors, agents, staff, or labour.

Sub-Clause 34.11: Arms and Ammunition

The Contractor shall not give, barter or otherwise dispose to any person or persons, any arms or ammunition of any kind or permit or suffer the same as aforesaid.

Sub-Clause 34.12: Festival and Religious Customs

The Contractor shall in all dealings with his staff and labour have due regard to all recognized festivals, days of rest and religious and other customs.

Sub-Clause 34.13: Disorderly Conduct

The Contractor shall at all times take all reasonable precautions to prevent any unlawful, Conduct riotous or disorderly conduct by or amongst his staff and labour and for the preservation of peace and protection of persons and property in the neighbourhood of the Works against the same.

Sub-Clause 35.3: Reporting of Accidents

The Contractor shall report to the Engineer details of any accident as soon as possible after its occurrence. In the case of any fatality more serious accident, the Contractor shall, in addition, notify the Engineer immediately by the quickest available means.

Sub-Clause 60.11: Advance Payment

The Employer will make an interest-free advance payment to the Contractor exclusively for the costs of mobilization in respect of the Works in an amount equivalent to 10% (Ten percent) of the Contract Price named in the Letter of Acceptance. Payment of such advance amount will be due under separate Certification by the Engineer after (i) execution of the Form of Agreement by the parties hereto; (ii) provision by the Contractor of the performance security in accordance with the Sub-Clause 10.1; and (iii) provision by the Contractor of an unconditional bank guarantee in a form and by a bank acceptable to the Employer in amounts and currency equal the advance payment. Such bank guarantee shall remain effective until the

advance payment has been repaid pursuant to paragraph (b) below, but the amount thereof shall be progressively reduced by the amount repaid by the Contractor as indicated in Interim Payment Certificates issued in accordance with this clause.

The advance payment shall be repaid through percentage deductions from the interim payments certified by the Engineer in accordance with this Clause. Deductions shall commence from the first Interim Payment Certificate, and shall be made at the rate of 20% (Twenty percent) of the amount of all Interim Payment Certificates in the types and proportionate amount of the advance payment until such time as the advance payment has been repaid; always provided that the advance payment shall be completely repaid prior to the time when 80 percent of the Contract Price has been certified for payment.

Sub-Clause 62.3: Ten Years Liability

Notwithstanding the issue of the Defects Liability Certificate, the Contractor shall remain liable for the stability of the structures and water tightness for a period of 10 years.

Sub-Clause 73.1: Foreign Taxation

The prices bid by the Contractor shall include all taxes, duties and other charges imposed outside the Lebanon on the production, manufacture, sale and transport of the Contractor's Equipment, Plant, materials and supplies to be used on or furnished under the Contract, and on the services performed under the Contract.

Sub-Clause 73.2: Local Taxation

The prices bid by the Contractor shall include all customs duties, import duties, business taxes, income and other taxes that may be levied in accordance to the laws and regulations in being as of the date 28 days prior to the closing date for submission of bids in Lebanon on the Contractor's Equipment, Plant, materials and supplies (permanent, temporary and consumable) acquired for the purpose of the Contract and on the services performed under the Contract. Nothing in the Contract shall relieve the Contractor from his responsibility to pay any tax that may be levied in the Employer's country on profits made by him in respect of the Contract.

In addition, The Contractor will be responsible for payment of Fiscal Stamps and the like relating to this Contract and shall have included all costs in connection within his unit rates.

Sub-Clause 73.3: Income Taxes on Staff

The Contractor's staff, personnel and labour will be liable to pay personnel income taxes in Lebanon in respect of such of their salaries and wages as are chargeable under the laws and regulations for the time being in force, and the Contractor shall perform such duties in regard to such deductions thereof as may be imposed on him by such laws and regulations.

Sub-Clause 74.1: Bribes

If the Contractor, or any of his subcontractor, agents or servants gives or offers to give to any person any bribe, gift, gratuity or commission as an inducement or reward for doing or

forbearing to do any action in relation to the Contract or any other contract with the Employer, or for showing or forbearing to show favour to any person in relation to the Contract or to any other contract with the Employer, then the Employer may enter upon the Site and the Works and expel the Contractor and the provisions of Clause 63 hereof shall apply as if such entry and expulsion had been made pursuant to that Clause.

Sub-Clause 76.1: Restrictions on Eligibility

Any plant, supplies or materials that will be incorporated in the Works, as well as the Contractor's Equipment, shall have its origin in eligible source countries as approved by the Engineer.

Sub-Clause 77.1: Details to be confidential

The Contractor shall treat the details of the Contract as private and confidential, save insofar as may be necessary for the purposes thereof, and shall not publish or disclose the same or any particulars thereof in any trade or technical paper or elsewhere without the previous consent in writing of the Employer or the Engineer. If any dispute arises as to the necessity of any publication or disclosure for the purpose of the Contract the same shall be referred to the decision of the Employer whose award shall be final.

Clause 78: Manufacturers and Suppliers

Despite what is mentioned in the Contract Documents and Drawings, the Employer and/or the Engineer reserves his right not to accept any alternative manufacturer and/or supplier than those specified in the Contract and the Contractor is deemed to have allowed for this condition in his Contract price.

Clause 79: Coordination of the Works

The Contractor shall be responsible for the coordination and proper execution of the Works, including coordination of other contractors. The Contractor shall, as specified in the Employer's Requirements and as requested by the Employer, afford all reasonable opportunities to any other Contractors engaged directly by the Employer for carrying out their work, and for coordination of their work including insurance coverage for those Contractors and for all the necessary attendance and the Contractor is deemed to have allowed in his prices for all costs and expenses in connection.

Clause 80: Right of Way and Facilities

The Contractor shall bear all costs and charges for special or temporary rights of-way required by him for access to the Site. The Contractor shall also provide, at his own cost, any additional facilities outside the Site required by him for the purposes of the Works.

Clause 81: Electricity, Water and Gas

The Contractor shall be entitled to use for the purposes of the Works such supplies of electricity, water, gas and other services as may be available on the Site and at his own cost.

If such services are not available on site, then the Contractor shall, at his risk and cost, provide any such utilities as necessary.

Clause 82: Joint and Several Liability

If the Contractor is a joint venture of two or more persons, all such persons shall be jointly and severally bound to the Employer for the fulfillment of the terms of the Contract and shall designate one of such persons to act as leader with authority to bind the joint venture. The composition of the joint venture shall not be altered without the prior consent of the Employer.

Clause 83: Responsibilities for Nominated Sub-contractors

Further to the provisions of Clauses 58.1 and 59.1 above within this Contract, the work of any Nominated Sub-contractor / Specialist is deemed to be inclusive of the design, fabrication, supply and installation of all work required by the Contract Documents, and as detailed in the Letter(s) of Nomination to the Nominated Sub-contractor, with the exception of the following which shall be the responsibility of the Main Contractor to provide under this Contract:

- Drilling, cutting or leaving holes for pipes, ducts and the like through walls, floors, partitions, roofs, etc. and subsequently making good.
- Trenching, cutting chases for pipes and the like in walls, floors, partitions, etc. and subsequently making good.
- The formation of concrete bases, plinths, etc. and equipment including anti vibration pads incorporated within the plinth as necessary. The subcontractor shall supply all other vibration isolation.
- Scaffolding, carnage, assistance in unloading and site distribution, water, lighting and power on site. However, task lighting to be provided by the nominated subcontractors.
- Provision of all site hoardings, controlled access openings and the like.
- Provide safe and secure storage area for all materials on site. The provision of the huts and stores shall be the Nominated Sub-contractors responsibilities.
- Provide insurance(s) for materials and work on site only. The Nominated Sub-contractor shall provide insurances for their staff and equipment.
- Carry out builders work in accordance with builders work drawings prepared by the Nominated Subcontractor and approved by the Engineer.
- Verify sizes and dimension on site and coordinate the Nominated Subcontractors work with all other trades.
- Programme the work of the Nominated Subcontractors.
- Provide protection to work executed by the Nominated Subcontractors and/or ensure protection is provided by relevant parties of the Contract.
- Provide site sanitary accommodation.
- Provide site fire safety and first aid facilities.
- Cast in all inserts and any other anchorage material required for the work which shall be embedded in the building structure and/or block work (including non-shrink grout) in accordance with the Nominated Subcontractors' shop drawings.

- Cleaning of the work and removal of debris from the site.

Clause 84: Taxation

The Contract shall be subject to the provision of the Income Tax Laws of Republic of Lebanon and any amendments thereto, and the Contractor will be responsible for making all necessary enquiries in this respect and shall be deemed to have satisfied himself regarding the application of all relevant tax laws.

Clause 85: Declaration against Waiver

The condoning by the Employer of any breach or breaches by the Contractor or any authorized Sub-Contractor of any of the stipulations and conditions contained in the Contract shall in no way prejudice or affect or be construed as a waiver of the Employer's rights, powers and remedies under the Contract in respect of any other breach or breaches as aforesaid.

Clause 87: Ownership of Goods and materials

Subject to clause 20.1, each item of Plant and materials shall become the property of the Employer whenever is the earlier of the following times:

When it is delivered to Site;

When the Contractor is paid the value of the Plant and Materials whichever is the earlier to occur.

Clause 88: Maintenance of Clear Title

If any Plant or materials remain in the possession of a third party when title thereto passes to the Employer, the Contractor shall take or cause to be taken all steps necessary under the laws of any relevant jurisdiction to perfect and maintain the Employer's title thereto against any claims by other parties with respect thereto.

The Contractor shall fully indemnify the Employer against any claims, losses or damage arising from any encumbrance upon any Plant or materials which are supplied by him or by any Subcontractor.

Clause 89: Local Taxes and Duties

The Contractor Price shall include all customs duties and charges, import duties, business taxes, income and other taxes that may be levied in accordance to the laws and regulations in being as of the date of signing the Contract by the Contractor in the Republic of Lebanon on the Contractor's Equipment, Plant, materials and supplies (permanent and consumable) acquired for the purpose of the Contract.

Clause 90: Income Tax on Staff

The Contractor's staff, personnel and labour will be liable to pay personal income tax in respect of such of their salaries and wages as are chargeable under the laws and regulations for the time being in force in Lebanon, and the Contractor shall perform such duties with regard to deductions of such taxes as may be imposed on him by such laws and regulations.

Appendix I

Construction Specifications Institute (CSI)

SECTION 013216 – CONSTRUCTION SCHEDULE

SECTION 013216 – CONSTRUCTION SCHEDULE

GENERAL

SUMMARY

This Section consists of Construction Schedule requirements including but not limited to the following:

- Schedule of Values
- Construction Schedule Requirements.
- Construction Schedule Updates.
- Time Impact Analysis.

Purpose: The purpose of the Construction Schedule is to ensure adequate planning, coordination, scheduling, and reporting during execution of the work by the Contractor. The Construction Schedule will assist the Contractor and Contracting Officer in monitoring the progress of the work, evaluating proposed changes, and processing the Contractor's monthly progress payment

DEFINITIONS

Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction project. Activities included in a construction schedule consume time and resources.

Critical activities are activities on the critical path. They must start and finish on the planned early start and finish times.

Predecessor Activity: An activity that precedes another activity in the network.

Successor Activity: An activity that follows another activity in the network.

Cost Loading: The allocation of the Schedule of Values for the completion of an activity as scheduled. The sum of costs for all activities must equal the total Contract Sum, unless otherwise approved by the Contracting Officer.

CPM: Critical path method, which is a method of planning and scheduling a construction project where activities are arranged based on activity relationships. Network calculations determine when activities can be performed and the critical path of Project.

Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.

Float: The measure of leeway in starting and completing an activity.

Float: Float is not for the exclusive use or benefit of either the Government or the Contractor but is jointly owned.

Free float is the amount of time an activity can be delayed without adversely affecting the early start of the successor activity.

Total float is the measure of leeway in starting or completing an activity without adversely affecting the planned Project completion date.

Resource Loading: The allocation of manpower and equipment necessary for the completion of an activity as scheduled.

Fragnet: A partial or fragmentary network that breaks down activities into smaller activities for greater detail.

SUBMITTALS

Schedule of Values: After contract award and before the Pre-Construction conference submit a schedule of dollar values based on the Contract Price Schedule.

Construction Schedule: After contract award and before the Pre-Construction conference, submit [**two**] <Insert number> copies of initial schedule, large enough to show entire schedule for entire construction period.

Submit an electronic copy of schedule, in the software it was created in, on CD-R, and labeled Initial schedule with date.

CPM Reports: Concurrent with CPM schedule, submit [**three**] <Insert number> copies of each of the following computer-generated reports. Format for each activity in reports shall contain activity number, activity description, [**cost**] and resource loading, original duration, remaining duration, early start date, early finish date, late start date, late finish date, and total float in calendar days.

Activity Report: List of all activities sorted by activity number and then early start date, or actual start date if known.

Logic Report: List of predecessor and successor tasks for all activities, sorted in ascending order by activity number and then early start date, or actual start date if known.

Total Float Report: List of all activities sorted in ascending order of total float.

Construction Schedule Updates: On or before the 7th day preceding the progress payment request date, submit estimates of the percent completion of each schedule activity and necessary supporting data. Provide two paper copies and one electronic copy.

Construction Schedule Revisions and Time Impact Analysis: For each Construction Schedule revision submit one electronic copy and [**two**] <Insert Number> paper copies of a Time Impact Analysis. Each Time Impact Analysis shall include a Fragmentary Network (Fragnet) demonstrating how the Contractor proposes to incorporate a modification, change, delay, or Contractor request into the Construction Schedule.

QUALITY ASSURANCE

The Contractor shall meet with the Contracting Officer on the day of the preconstruction conference to go over the following:

- Review software limitations, content and format for reports.
- Verify availability of qualified personnel needed to develop and update schedule.
- Discuss constraints, including **[phasing] [work stages] [area separations] [interim milestones] [and] [partial Government occupancy]**.
- Review delivery dates for Government-furnished products.
- Review schedule for work of separate Government contracts.
- Review time required for review of submittals and re-submittals.
- Review requirements for tests and inspections by independent testing and inspecting agencies.
- Review time required for completion and startup procedures.
- Review and finalize list of construction activities to be included in schedule.
- Review initial schedule comments, resolve issues and progress on incorporating them
- Review procedures for updating schedule.

Contractor's Schedule Representative: Before or at the preconstruction conference, designate in writing and provide the qualifications of an authorized representative in the Contractor's organization who shall be responsible for coordinating with the Contracting Officer during the preparation and maintenance of the Construction Schedule.

COORDINATION

Coordinate preparation and processing of schedules and reports with performance of construction activities and with scheduling and reporting of separate contractors.

Coordinate Construction Schedule with the Schedule of Values, list of subcontracts, Submittals Schedule, progress reports, payment requests, and other required schedules and reports.

In developing the Construction Schedule, ensure that subcontractor work at all tiers, as well as the prime contractor's work, is included and coordinated in the Construction Schedule.

Secure time commitments for performing critical elements of the Work from parties involved.

Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

PRODUCTS

SCHEDULE OF VALUES

Breakdown each lump-sum item into component parts of work for which progress payments may be requested. The total costs for the component parts of work shall equal the contract price for that lump-sum item. The Contracting Officer may request data to verify accuracy of

dollar values. Include mobilization, general condition costs, overhead and profit in the total dollar value of unit price items and in the component parts of work for each lump-sum item. Do not include mobilization, general condition costs, overhead or profit as a separate item.

Do not break down unit price items. Use only the contract price for unit price items.

The total cost of all items shall equal the contract price. The Schedule of Values will form the basis for progress payments.

An acceptable Schedule of Values shall be agreed upon by the Contractor and Contracting Officer before the first progress payment is processed.

CONSTRUCTION SCHEDULE REQUIREMENTS

Construction Schedule: Prepare Construction Schedule using a computerized, [cost], [and] resource-loaded, time-scaled CPM network analysis diagram for the Work.

Develop and finalize Construction Schedule so it can be accepted for use no later than [30] <Insert number> days after date established for the Notice of Award.

Failure to include any work item required for performance of this Contract shall not excuse Contractor from completing all work within applicable completion dates, regardless of Governments acceptance of the schedule.

Establish procedures for monitoring and updating Construction Schedule and for reporting progress. Coordinate procedures with progress meeting and payment request dates. Use "one workday" as the unit of time. Incorporate nonworking days and government holidays into the schedule.

Construction Schedule Preparation: Prepare a list of all activities required to complete the Work. Using the preliminary CPM network diagram, prepare a skeleton network to identify probable critical paths.

Activities: Indicate the estimated duration, sequence requirements, and relationship of each activity in relation to other activities.

Critical Path Activities: Identify critical path activities, including those for interim completion dates. Scheduled start and completion dates shall be consistent with Contract milestone dates.

Processing: Process data to produce output data on a computer-drawn, time-scaled network. Revise data, reorganize activity sequences, and reproduce as often as necessary to produce the CPM schedule within the limitations of the Contract Time.

The Construction Schedule as developed shall show the sequence and interdependence of activities required for complete performance of the work. Ensure all work sequences are logical and the Construction Schedule shows a coordinated plan of the work.

Resource loading of each activity shall include all personnel by labor category and equipment type and capacity proposed to complete the activity in the duration shown.

Time Frame: Proposed duration assigned to each activity shall be the Contractor's best estimate of time required to complete the activity considering the scope and resources planned for the activity.

The late finish date shown on the schedule shall be the same date as the last day of the contract period.

Contract completion date shall not be changed by submission of a schedule that shows an early completion date.

The Contractor shall limit use of lead or lag duration's between schedule activities.

Activity Duration: Define activities so no activity is longer than [15] **<Insert number>** days, except for non-construction activities including mobilization, shop drawings and submittals, fabrication and delivery of materials and equipment.

Procurement Activities: Include procurement process activities for the following long lead items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.

<Insert list of major items or pieces of equipment.>

Submittal Review Time: Include review and re-submittal times indicated. Coordinate submittal review times in Construction Schedule.

Startup and Testing Time: Include not less than **<Insert number>** days for startup **[and] testing [and commissioning activities]**.

Substantial Completion: Allow time for Government administrative procedures necessary for certification of Substantial Completion.

Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.

Phasing: Arrange list of activities on schedule by phase.

Work under More Than One Contract: Include a separate activity for each contract.

Work Restrictions: Show the effect of the following items on the schedule:

Coordination with existing construction.

Limitations of continued occupancies.

Uninterruptible services.

Partial occupancy before Substantial Completion.

Use of premises restrictions.

Provisions for future construction.

Seasonal variations.

Environmental control.

Work Stages: Indicate important stages of construction for each major portion of the Work.

Other Constraints: **<Insert additional constraints not indicated elsewhere.>**

Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and Final Completion[.] [, **and the following interim milestones:**]

<Insert additional milestones not indicated elsewhere.>

Joint Review, Revision, and Acceptance:

Within seven calendar days of receipt of the Contractor's proposed Construction Schedule, the Contracting Officer and Contractor shall meet for joint review, correction, or adjustment of the initial Construction Schedule. Any areas which, in the opinion of the Contracting Officer, conflict with timely completion of the project shall be subject to revision by the Contractor.

Within seven calendar days after the joint review between the Contractor and Contracting Officer, the Contractor shall revise and resubmit the Construction Schedule in accordance with agreements reached during the joint review.

In the event the Contractor fails to define any element of work, activity, or logic, and the Contracting Officer review does not detect this omission or error, such omission or error, when discovered by the Contractor or Contracting Officer, shall be corrected by the Contractor within seven calendar days and shall not affect the contract time.

Upon acceptance of the Construction Schedule by the Contracting Officer, the Construction Schedule will be used to evaluate the Contractor's monthly applications for payment based upon information developed at the monthly Construction Schedule update meeting.

Cost Correlation: In the heading of the schedule, provide a cost correlation line, indicating planned and actual costs. On the line, show dollar volume of the Work performed as of dates used for preparation of payment requests.

Contractor shall assign cost to construction activities on the Construction Schedule. Costs shall not be assigned to submittal activities unless specified otherwise but may, with Contracting Officer's approval, be assigned to fabrication and delivery activities. Costs shall be included for testing and commissioning activities, operation and maintenance manuals, punch list activities, Project Record Documents, and demonstration and training (if applicable).

Each activity cost shall reflect an accurate value based on the Contract Price Schedule.

Total cost assigned to activities shall equal the total Contract Price.

Computer Software: Prepare schedules using a program that has been developed specifically to manage construction schedules.

Software: The software shall be the latest version of [**Primavera Project Planner**], version <Insert designation>, [**Primavera Contractor**], version <Insert designation>, [**Microsoft Project**], version <Insert designation> or approved equal.

The Contractor shall provide to the Contracting Officer a licensed copy of the software used to create the Construction Schedule and a software reference manual. The software and reference manual will be returned to the Contractor at completion of the Contract

EXECUTION

CONSTRUCTION SCHEDULE UPDATES

Progress Meeting Updates: Provide updated schedule information before each weekly progress meeting.

Issue updated schedule concurrently with the report of each such meeting. Incorporate revisions into the schedule in a timely manner.

Monthly Schedule Updates:

General: Update the Construction Schedule on a monthly basis to reflect actual construction progress and activities throughout the entire contract period and until project substantial completion. The status date of each schedule update shall be the 7th day preceding the progress payment request date.

Procedure: The Contractor shall meet with the Contracting Officer each month at a Construction Schedule update meeting to review actual progress made through the status date of the Construction Schedule update, including dates activities were started and/or completed and the percentage of work completed on each activity started and/or completed.

Reports: Concurrent with making revisions to schedule, prepare tabulated reports showing the following:

- Identification of activities that have changed.
- Changes in early and late start dates.
- Changes in early and late finish dates.
- Changes in activity durations in workdays.
- Changes in the critical path.
- Changes in total float or slack time.
- Changes in the Contract Time.

As the Work progresses, indicate Actual Completion percentage for each activity.

Progress Payments: The monthly updating of the Construction Schedule shall be an integral part of the process upon which progress payments will be made under this contract. If the contractor fails to provide schedule updates or revisions, then a portion of his monthly payment may be retained until such corrections have been made.

Distribution: Distribute copies of accepted schedule to Contracting Officer, Contracting Officers Representative, Construction Management Representative, Subcontractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.

Post copies in Project meeting rooms and temporary field offices.

When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

Construction Schedule Revisions:

Required Revisions: If, as a result of the monthly schedule update, it appears the Construction Schedule no longer represents the actual prosecution and progress of the work, the Contracting Officer will request, and the Contractor shall submit, a revision to the Construction Schedule. The Contractor may also request reasonable revisions to the Construction Schedule in the event the Contractor's planning for the work is revised. If the Contractor desires to make changes in the Construction Schedule, the Contractor shall notify the Contracting Officer in writing, stating the reason for the proposed revision. Accepted revisions will be incorporated into the Construction Schedule at the next monthly schedule update.

Procedure: If revision to the Construction Schedule is contemplated, the Contractor or Contracting Officer shall so advise the other in writing at least seven calendar days prior to the next monthly schedule update meeting, describing the revision and reasons for the revision. Government-requested revisions to the Construction Schedule will be presented in writing to the Contractor, who shall respond in writing within seven calendar days.

TIME IMPACT ANALYSIS FOR CONTRACT MODIFICATIONS CHANGES DLAYS AND CONTRACTOR REQUESTS:

Requirements: When contract modifications or changes are initiated, delays are experienced, or the Contractor desires to revise the Construction Schedule, the Contractor shall submit to the Contracting Officer a written time impact analysis illustrating the influence of each modification, change, delay, or Contractor request on the contract time.

Time Extensions: Activity delays shall not automatically mean that an extension of the contract time is warranted or due the Contractor. It is possible that a modification, change, or delay will not affect existing critical path activities or cause non-critical activities to become critical. A modification, change, or delay may result in only absorbing a part of the available total float that may exist within an activity chain of the Construction Schedule, thereby not causing any effect on the contract time. Time extensions will be granted in accordance with the terms of the contract.

Extension of the contract time will be granted only to the extent the equitable time adjustments to the activity or activities affected by the modification, change, or delay exceeds the total (positive or zero) float available on a particular activity.

Procedure: Each time impact analysis shall be submitted within the time period stated in a request for proposal, or the time period designated under the clauses entitled Changes or Default. In cases where the Contractor does not submit a written request for extension of time and a time impact analysis within the designated time, it is mutually agreed that the particular modification, change, delay, or Contractor request does not require an extension of the contract time. Upon acceptance, the time impact analysis shall be incorporated into the Construction Schedule at the next monthly schedule update.

Contract Modifications: For each proposed contract modification and concurrent with its submission, prepare a time-impact analysis using fragnets to demonstrate the effect of the proposed change on the overall Construction Schedule.

END OF SECTION 013216

Appendix J

Royal Institution of Chartered Surveyors
(RICS)

Principles of Measurement International for Works of Construction
COVER

**Principles
of
Measurement
(International)
For Works
of
Construction**

JUNE 1979

